finish

THE MAGAZINE OF

Appliance AND

Metal Products MANUFACTURING

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- Mixers
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POROX Grinding Balls—all sizes

ARLCITE High Density Grinding Balls

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The Patterson Foundry and Machine Company, (Canada) Limited

Toronto, Canada

MONTREAL

ADS OUT

Kaiser Metal Products, Inc., reduced milling costs over 20% per 1000 pounds of frit milled

WITH ALMOST NO BALL WEAR!

"Here at Kaiser Metal Products, Inc., we have conducted tests using Coors High Density Grinding Balls in groundcoat preparation. As a result, we have charged five of our six mills with Coors High Density Balls. Also, we now charge 3000 lbs. of frit in a 2000 lb. mill (5'x 6') when using Coors High Density Balls and get our grind in 5½ hours.

"Using regular grinding balls, the grinding time for 1000 lbs. of frit is 2¾ hours; with Coors High Density Balls the grinding time for 1000 lbs. of frit averages 1.36 hours.

"In addition, our tests reveal that only 10.3% of the batch is retained in the mill when Coors High Density Balls are used, as compared with 16.1% when using regular grinding balls.

"In a comparison test of 51 millings, 50% more enamel was milled when using Coors High Density Balls, and there was a reduction in cost of approximately 22% per 1000 lbs. of frit milled. No replacement of high density grinding media was necessary during milling, nor at the dumping cycle; whereas 742 pounds of regular media was replaced. A similar reduction in power costs was noted."

Keep your costs down, get a better enamel faster and cheaper by charging your mills with Coors High Density Grinding Balls!

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GOLDEN, COLORADO

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Please send price list, recommendations and samples of COORS Alumina Ceramic Grinding Balls.

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AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet

Subject: HOW GRANODRAW PHOSPHATE COATING FACILITATES COLD EXTRUSION OF STEEL

INTRODUCTION

By phosphate coating steel, prior to cold working it, extrusion, drawing, and other forming operations are greatly improved. In fact, it is the protective zinc phosphate coating that makes for the successful cold deformation of steel.

The tremendous pressures that most forming operations require produce extremely high frictional contact between die and metal. Without a protective coating, excessive galling (welding) of dies, breakage of tools, and unduly short die life will result. The combination of a non-metallic crystalline phosphate coating with an adsorbed lubricating film, possesses a low coefficient of friction while maintaining its stability under extremely high deforming pressures. This combination, therefore, greatly minimizes the aforementioned tool difficulties.

THE COLD EXTRUSION OF GENERATOR FRAMES

Cold extrusion is now being used advantageously in the manufacture of high production generator frames. This operation is facilitated by careful preparation and proper coating of the frame blank which is made from SAE 1010 open hearth plate steel.

After wheelabrating to remove the scale, the blank is rolled up and then fed automatically through a six stage dip wheel type washing machine which cleans the surface and applies the coating. The frame is then fed into an extrusion press where the wall thickness is increased on one end and reduced 47.5 percent on the other end. This operation produces concentric frames of uniform thickness and correct dimensions.

The Granodraw coating produces the proper surface to receive the lubricant by furnishing an extremely adherent film with the proper crystal size and continuity of coating required to insure maximum adsorbsion and tenacity by the lubricant. The lubricant, Montgomery DF 1101, is a combination of titre alkali soaps and resins. It is a powder which when dissolved in water and redeposited on the phosphate coated work piece, produces the necessary surface for subsequent operations. This film is dry and considerably less hydroscopic than similar coatings of the soap type. The concentrations of both the Granodraw and DF 1101 are maintained by simple chemical analysis.

PROTECTIVE COATING SEQUENCE

Stage	Operation	Chemical	Time	Temperature
1	Load and unload			
2	Cleaning	Tri-sodium phosphate and soda ash	1 Min.	180° F
3	Water rinse		1 Min.	180° F
4	Zinc phosphate coating	"Granodraw"*	4½ Min.	165° F to 180° F
5	Water rinse		2 Min.	180° F
6	Lubricating	H.A. Montgomery lubricant DF 1101	4½ Min.	190° F

*Trade Mark of the American Chemical Paint Company

CHEMICALS ACP PROCESSES

MEETINGS

ENAMEL INSTITUTE FORUM

Porcelain Enamel Institute, annual Shop Practice Forum, Ohio State University, Columbus, September 16-18.

INSTRUMENT CONFERENCE

Instrument Society of America, National Instrument Conference and Exhibit, Chicago, September 21-25.

PEI ANNUAL MEETING

Porcelain Enamel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., September 30-October 2.

METAL STAMPERS MEETING

Pressed Metal Institute, annual meeting, Bellevue-Stratford Hotel, Philadelphia, October 7-10.

PACKAGING FORUM

Packaging Institute, annual forum, Hotel Statler, New York City, October 12-14.

INDUSTRIAL PACKAGING SHOW

Society of Industrial Packaging and Materials Handling Engineers, annual Industrial Packaging and Materials Handling Exposition, Short Courses and Competition, Mechanics Hall, Boston, Mass., October 18-24.

AMERICAN GAS ASSN. MEETING

American Gas Association, annual Convention, Keil Auditorium, St. Louis, October 26-29.

VACUUM CLEANING, HOME LAUNDRY CONFERENCES

National Home Vacuum Cleaning Conference and National Home Laundry Conference, November 4 and 5-6, respectively, Hotel Commodore, New York City.

ADS OUT

finish SUGGESTION BOX

Handling embossed sheet metal parts at Electrolux

THE difficulty of separating embossed metal sheets (that nest tightly) for further processing used to be a time-consuming operation at Electrolux Corporation's plant in Old Greenwich, Connecticut.

Now, all the press operator has to do is pick up a quantity of sheets and place them against a magnetic separator which automatically fans out the sheets, making it a simple matter to pick them up one at a time.

Photo shows a vacuum cleaner body stamping getting a second operation. Before the use of the magnetic sheet separator, the embossed sheets, as seen in the tote pan, had to be separated by hand.

The unit comprises a permanent magnet that induces a magnetic field in the stacked steel sheets which tend to repel each other, causing the ends of the sheet to fan out with air space between them. Production is sharply increased.

Source for further information on magnetic sheet separators may be obtained by writing directly to *finish*.

MAGIC CHEF JOINS NEMA

The National Electrical Manufacturers Association has announced that Magic Chef, Inc., St. Louis, has joined NEMA as a member of the Major Appliance Division and the Electric Range Section.

NEMA HOUSEWARES SECTION NAMES ORR VICE CHAIRMAN

G. W. Orr, sales manager, electric housewares division, John Oster Mfg. Co., Racine, Wis., and chairman of the sales promotion committee of the Electric Housewares Section of the National Electrical Manufacturers Association, has been named Section vice chairman.

NPA REMOVES CONTROLS ON COBALT, MOLYBDENUM, COLUMBIUM-TANTALUM

Removal of allocation control over cobalt, molybdenum, and columbium-tantalum has been announced by the National Production Authority, Department of Commerce, through issuance of amendments or revocations affecting Order M-80 and its schedules.

The action leaves only nickel under complete control, including allocation. Melters and processors of nickel will continue to apply to NPA or its successor agency for monthly allocations, and nickel will be subject to use and inventory control as it has been since August 15, 1951, when Order M-80 was issued.

Anyone in the metal finishing business knows "grime doesn't pay"—and anyone who has been around long can tell you that with Northwest's methods and materials even the toughest jobs "come clean" in a jiffy.

Northwest's top quality products used in a carefully "job-adjusted" manner worked out for you by our thoroughly experienced "cleaning specialists" is your assurance of a finish you can depend on.

Cleaning is the key to fine finishing—be SURE of the result with Northwest's products and personalized service.

Got a problem? Let our cleaning experts help you!

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

ADS OUT

THE finish spotlight

The new Norge dryer has a specially designed drying action — whether it's for pillows, stuffed toys, knitted stockings, or rough shag rugs. The Time-Line dryer operates with room temperature air or heated air, with or without tumbling. An illuminated control panel measures the drying periods up to two hours. The new dryer is available in electric or gas models.

INCOLOY INCOLOY INCOLOY INCOLOY INCOLOY INCOLOY INCOLOY INCOLOY

Latest facts about

INCOLOY

Newest member of the Inco family

Incoloy® was developed as a companion to Inconel®, long considered one of industry's most durable high temperature metals.

The latest test results now definitely establish the importance of Incoloy as a new high temperature material. (See tables.) In fact, its most useful mechanical properties are comparable to those of Inconel at temperatures up to 1800°F.

Both metals offer good resistance to oxidation. But Incoloy, having a lower nickel content, is likely to provide greater resistance to sulfur attack.

In structure, Incoloy is stably austenitic, and shows no tendency to become embrittled by precipitation of sigma or carbidic phases after prolonged exposure to intermediate temperatures.

Note also, in the tables, the important preliminary creep and rupture data which have been developed on Incoloy.

Like Inconel, the new alloy is readily workable, both hot and cold. Its rate of work hardening is practically the same as that of Inconel. And Incoloy can be welded by commonly-used methods.

All of the usual mill forms are produced — billets, rounds, flats, hexagons, sheet and strip, rods, tubing and wire. Consult your distributor of Inco Nickel Alloys for the latest information on availability from warehouse and mill. And remember — it usually helps to anticipate your requirements well in advance.

Remember, too, that you can always call on Inco's High Temperature Engineering Service for assistance in selecting the *right* metal for any high temperature application. All you need do is write and ask for a copy of the "High Temperature Worksheet." This is a simplified form especially designed to help you highlight the essential facts of your particular problem. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

**Incoloy
Preliminary Creep and Rupture Data
Condition: Coarse-Grained Annealed***

Creep

Temp. °F	Stress, psi, to Produce a Minimum Creep Rate of: .01%/1000 hrs.	.10%/1000 hrs.
1400	4400	5500
1600	2000	2900
1800	250	500
2000	....	200**

Rupture

Temp. °F	Stress, psi, to Produce Rupture in: 1000 hrs.	10,000 hrs.	100,000 hrs.
1400	8700	6000	(4200)
1600	3800	2200	(1300)
1800	1700	1100	(670)
2000	850	(540)	....

*2 hrs. 2050°F AC
**.07% 1000 hrs. (4000 hrs.)

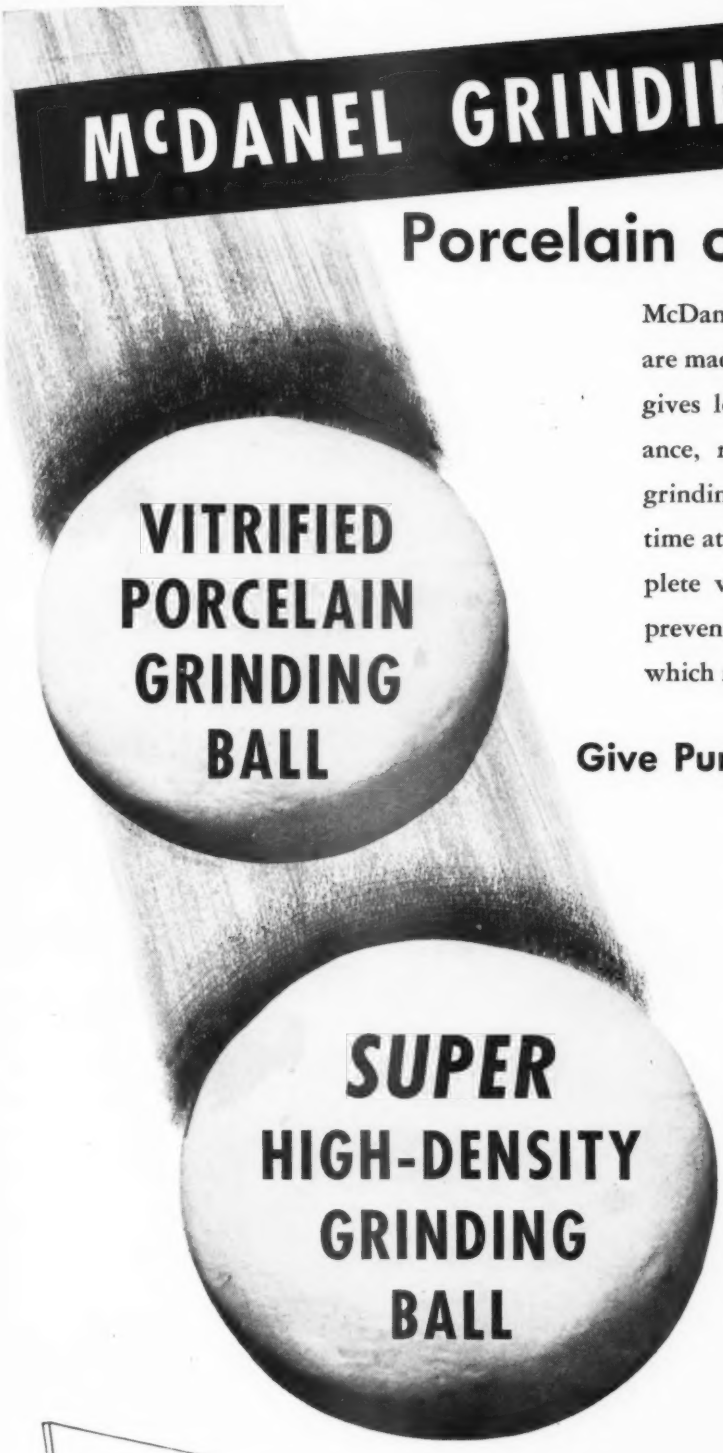
INCO TRADE MARK

Inco Nickel Alloys

Incoloy... *for Heat-Resisting Applications*

McDANEL GRINDING BALLS

Porcelain or High Density



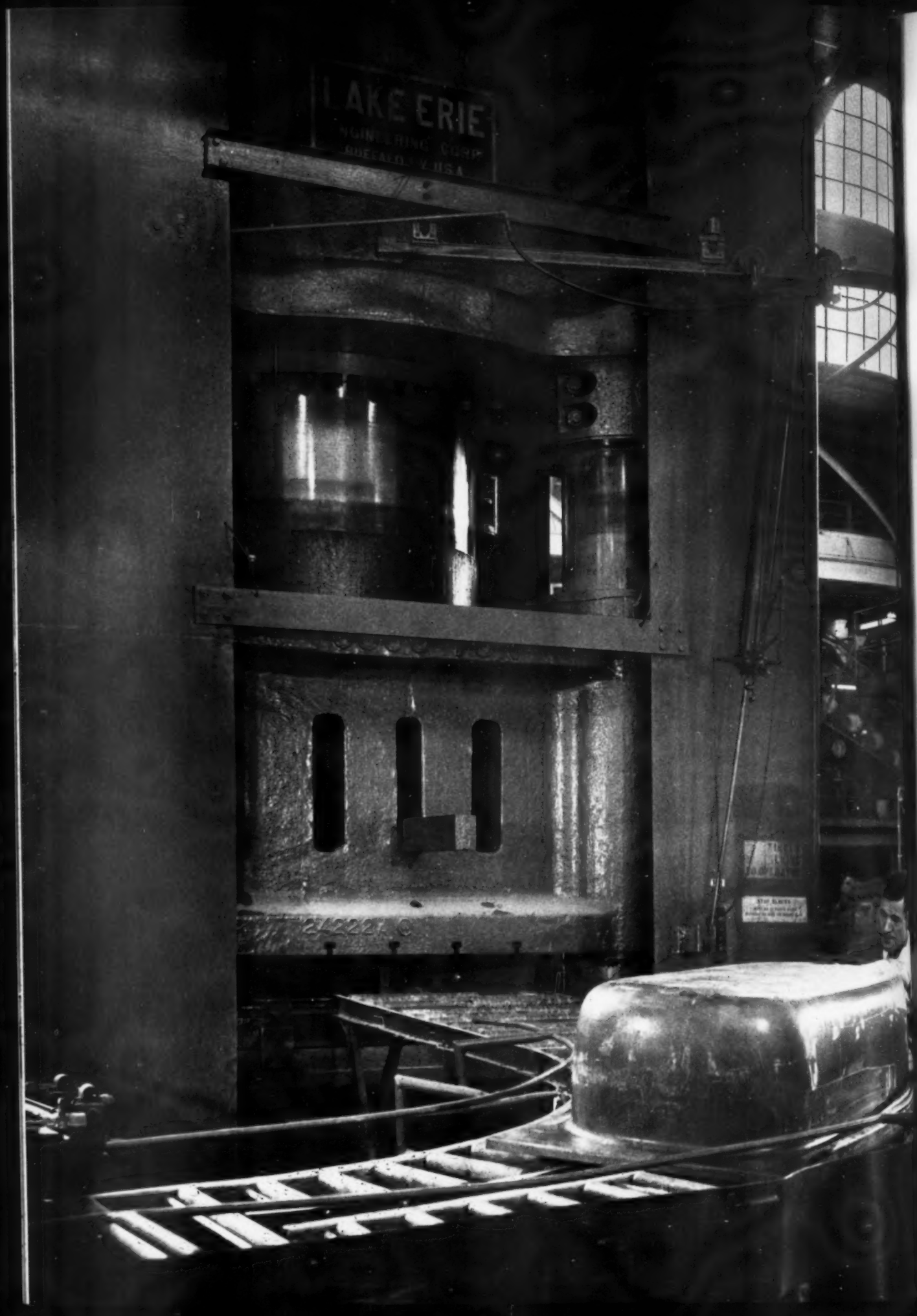
McDanel Vitreous Porcelain Grinding Balls are made from a specially developed body that gives long wear and excellent impact resistance, resulting in economical and uniform grinding. They are fired over a long period of time at controlled temperatures to assure complete vitrification. After firing, slow cooling prevents any strains being set up in the balls which might cause cracking and chipping.

Give Pure, Clean, Uniform Batches

McDanel Super High Density Grinding Balls are made from a body that contains a high percentage of Alumina. They are fired at higher temperatures than regular porcelain and completely vitrified and impervious. The high density balls are heavier, harder and more wear resistant than regular porcelain balls, and consequently create new and important possibilities in ceramic ball milling.

All McDanel Balls, Porcelain or High Density, are subjected to severe ball mill testing and carefully hand inspected before shipment.

McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNA.


LAKE ERIE
BUFFALO, N.Y. U.S.A.

Producing pressed steel bathtubs and sinks at Norris-Thermador

a completely conveyorized West Coast plant for fabricating and enameling steel sanitary ware and other contract work

by Gilbert C. Close • WESTERN EDITOR

Exclusive feature finish

When you first enter the huge porcelain enameling department at Norris-Thermador Corporation, Los Angeles, you get a feeling that you have entered a dream world where the air is filled with pieces of appliance ware, drifting in aimless profusion without goal, intent or purpose. But a quick look around dispels this first impression. You realize that you are in an efficiently conveyorized stamping and enameling plant.

When a product is "handled" at Norris, it is merely attached to a conveyor which does the rest of the work. When products must be transferred from one conveyor to another, the two conveyor systems will parallel each other at that point, and the handwork involved is merely to remove the product from one conveyor and hang it on the other.

Five separate conveyor systems

In all, five separate conveyor systems lace the department, totaling some 2100 feet of chain. With hangars at two-foot intervals, this means that during top production, more than a thousand pieces of enamelware could be conveyorized at one time. There is a ground coat chain, a white coat chain, a furnace chain, a cooling chain, and a service conveyor chain in the storage and shipping department. Each is carefully laid out and directed to deliver the right amount of enamelware at the right place at the right time, without overcrowding or delays. In some cases, such as on the chain in the storage and crating department, products may be left suspended all night, thus providing work for the department the next morning before that day's production run starts to arrive.

While Norris-Thermador produces thousands of sinks, lavatories and electric range parts each year, steel bathtubs, both the home type and some for trailers, constitute the major portion of the run on most days. These tubs adhere to a single design to facilitate meeting the company's already huge production potential. A one-coat system, either in white or colors, is used in enameling the tubs after a conventional appliance-ware ground coat has been applied. Slump tests of all mill runs, and consistent spot checking with magnetic thickness gauges on coating thickness are used to maintain coating quality and uniformity.

The plant receives the steel for the bathtubs in flat sheet, unoiled form. This material is unloaded from box cars onto a ramp adjacent to the cleaning and pickling department. This department contains nine large solution tanks. Gas is used for heating. Work is handled into and out of the tanks with an overhead traveling crane, handling either specialized work holders or conventional baskets.

6000-ton press stamps tubs

De-scaling of the incoming unoiled sheet stock is accomplished in a sulphuric acid bath (titrated daily to maintain solution formula), followed by a hot rinse at 160 degrees F., then a dip in a commercial neutralizing solution. After this de-scaling and cleaning operation, the sheets are transported to another building where they are deep drawn into bathtub bodies in a 6000-ton hydraulic press. This is the largest press of its kind in the west for deep draw and stamping work.

The formed bathtubs are then returned to the enameling department and enter first on a roller conveyor which carries them through several consecutive welding operations for addition of the apron, legs and gussets. The completely fabricated bathtubs then continue by roller conveyor back to the cleaning and pickling department. Here they are racked in special large holders for solution immersion by the overhead traveling crane.

Because a soap-type lubricant is used during the stamping operation, this second cleaning requires the use of an emulsifying solution. A special commercial vitreous enamel cleaner is employed for the first dip to remove the forming lubricant. This is followed by a hot rinse at 160 degrees F., then a cold rinse at room temperature. The tubs then go into the acid dip, followed by another hot

A formed bathtub shown leaving the huge 6000-ton hydraulic press.

1. *When the bathtubs return from the 6000-ton press, they are placed on a roller conveyor and accessories are welded on. Here the apron is being welded.*

2. *Here, the gussets and legs are spot welded in place. From this station, the tub travels by roller conveyor into the cleaning and pickling department.*

rinse, then into the neutralizer. While the final three solutions are the same as used for the initial de-scaling work, they are contained in different tanks to avoid over-contamination.

When the tubs leave the pickling department, they are unloaded from the cleaning baskets in a spot directly adjacent to the ground coat line. After loading on the ground coat line, final inspection and touch up is accomplished during the first phase of travel toward the ground coat booth.

Ground coat application

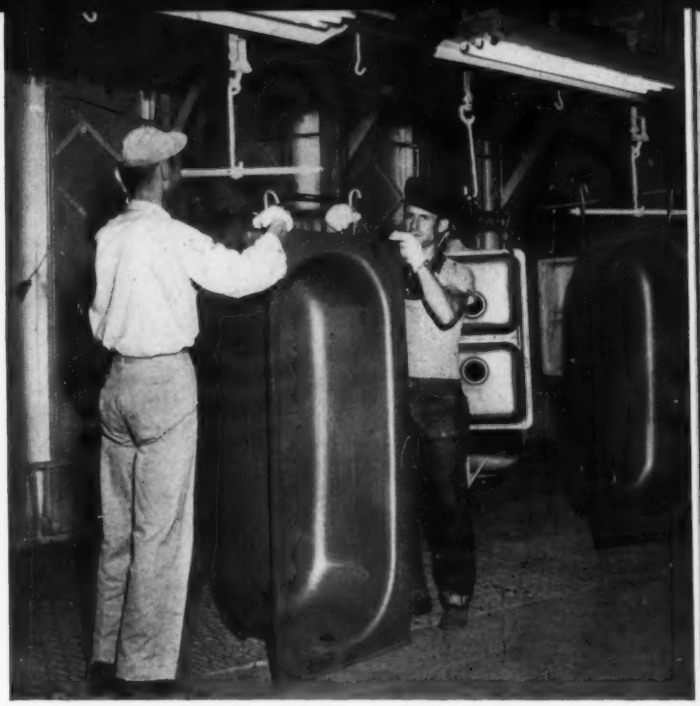
Just before the bathtubs enter the ground coat booth, they are completely wiped down and blown off with compressed air to remove any loosely adherent material. They then enter the 60-foot long water-wash ground coat booth where six spray operators alternate in applying the ground coat as the bath tubs move along. Though this booth is not enclosed, the air flow and water curtain effectively absorb all overspray.

Immediately after leaving the ground coat booth, the conveyor arcs

5. *As the bathtubs start along the ground coat line, they are given final inspection and touch-up. Here, a workman smooths a rough area with a portable grinder.*

6. *Partial view of the 60-foot water-wash ground coat booth, showing ground coat being applied to a sink. Sinks are interlaced with bathtubs throughout the line.*

3. *A full load of tubs racked in a special holder being lowered into a pickling tank. Cleaning and pickling employs a nine-tank system.*



4. *Immediately after final cleaning and pickling, the bathtubs are unloaded from the cleaning basket in this area, then hung on the ground coat conveyor chain.*

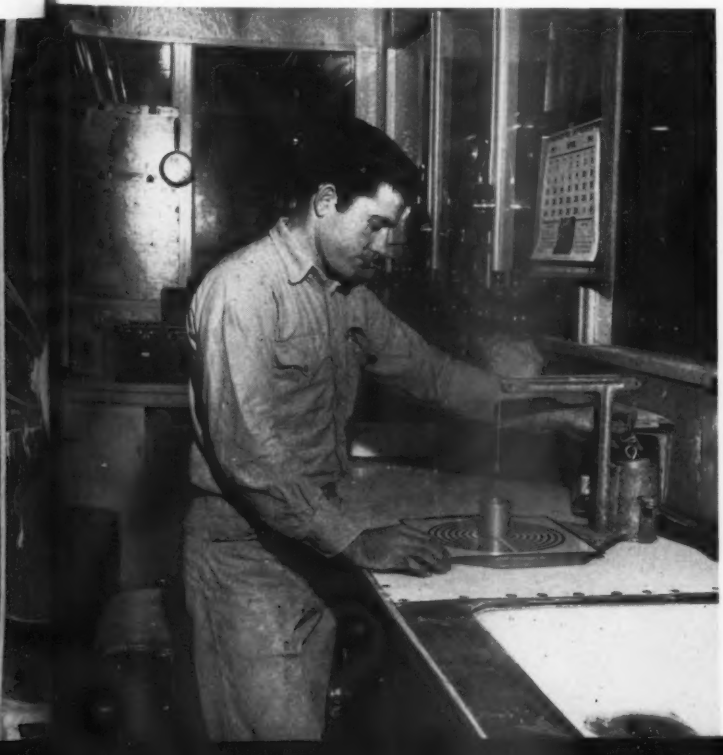
upward into a drying chamber constructed against the department's high ceiling. A drying temperature of 260 degrees F. is used. When fully loaded, this ground coat chain can handle 100 bathtubs plus 100 sinks at one time. After leaving the drying chamber, the conveyor arcs downward again and parallels the furnace chain for about 50 feet to simplify transfer of the work.

The furnace chain is of ample capacity to handle all the work delivered by the ground coat line. The furnace itself is a U-Type, with nine gas-fired burners, a 50 foot burning zone, and is 206 feet long.

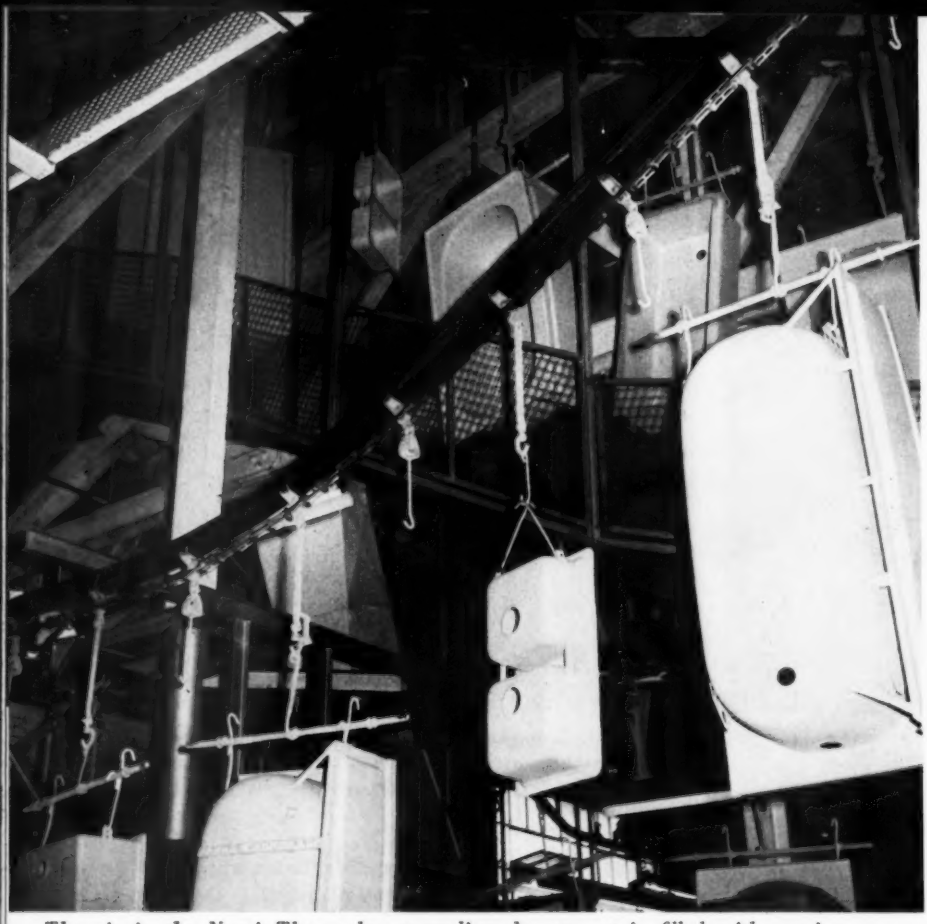
One cover coat system

After leaving the furnace, the furnace chain parallels the cooling chain for some distance . . . again to simplify transfer of the work. The cooling chain in turn parallels the white coat chain at a convenient location and after the work has traveled far enough and long enough to become cooled. The white (or color) coat booth is a double-walled 45-foot water-wash installation, and in this

7. *A laboratory technician prepares to run a slump test on a newly-ground slip in the department's small but efficient quality control laboratory.*



8. *Here, a millroom attendant adjusts the centrifugal sieve — magnetic separator setup, to assure clean delivery of the slip to the pressure tanks.*



The air in the Norris-Thermador enameling department is filled with moving enamelware. Here (in background) sinks and bathtubs descend from the ceiling-high drying oven, make an abrupt horseshoe turn, then move onward into the U-type enameling furnace.

case the booth is closed off from the rest of the department. A one-coat system is employed with either white or colors.

Again, after leaving the white booth, the bathtubs and other enamelware are upward to the ceiling and travel through a separate white coat drying chamber. They are then transferred to the furnace line for final burning, then onto the cooling line. The cooling line carries both the ground coated and white coated material through an inspection booth during the course of its travel. Here each bathtub is inspected for any spraying or burning defects, or other overlooked faults that require correction.

Service conveyor carries crating department backlog

At one place, the cooling line junctures with the conveyor chain in the storage and crating department. Here again it is only necessary to transfer the ware from one line to the other. In actual practice, every other bathtub is selected from the storage line for crating after the day's production run starts to arrive. This leaves alternate tubs to be crated the next morning before that day's production run starts to arrive. Thus the crating department always has ample work on hand to keep it busy during an eight-hour shift.

Wire-bound crates are used for shipping the tubs. All contact points within the crates are provided with paper-wrapped straw pads. The crate is placed on a roller conveyor just under the storage line so that the bathtubs may be conveniently removed from the line and placed upside down in the crate. The crate then moves along the roller conveyor to a second station where the bottom of the bathtub is sprayed with a rubber-like sound-absorbing material. The crated tub then moves onward to a third station where the crate top is fastened in place. The bathtub is then ready for immediate shipment or temporary storage.

Enamel preparation

The millrooms at Norris-Thermador contain three 2000 lb. mills, one 1000 lb., one 500 lb., one 250 lb., and one 100 lb. mill. High density grinding balls are used in all the mills, and according to departmental officials, have proved very satisfactory for their purpose. After grinding, the slip is pumped into wood

to Page ST-20 →

Glen Fulton, superintendent of the enameling department, holds frequent meet of all his foremen to iron out departmental problems. Here, shown during a a meeting, seated left to right, are: Ralph Oliver, night foreman in the pickle ro Joe Shull, production control; Harry Knowles, assistant superintendent; Glen Fu superintendent; and Jack Bevans, assistant superintendent. Standing, left to r are: Joe Goines, leadman in spray; Gene Schneider, day leadman in the pickle ro Gus Miranda, leadman in the mill room; Tom Sheldon, leadman in crating; and McCool, leadman in welding.

ADS OUT

A 30" spun cone compared to a full newspaper.

Fabricating the STEEL television "tube"

a combination of "automatic" metal spinning and press operations now used for producing the steel cone

by Arnold Hildebrandt • CHIEF FIELD ENGINEER, SPINCRAFT, INC., MILWAUKEE, WISCONSIN

Many sizes are spun. The short small cone is an experimental piece for color television.

Exclusive feature finish

In 1948 it was an open secret that television set manufacturers were greatly worried over a serious shortage of television picture tubes, the cone-shaped glass cathode ray tubes with the fluorescent coated glass plate which forms the screen for the television picture. The demands of the set makers were multiplying so tremendously that this country's glass manufacturers simply could not begin to produce enough tubes to solve this problem.

Then television tube engineers discovered that Type 446 stainless steel had identical characteristics for tube application as the glass used on regular tubes. Having approximately the same coefficient of expansion as the glass, a method was developed of "fusing" the glass face and tail piece to a funnel-shaped section of Type 446 material. Several samples were made by crude production methods but a very satisfactory image was obtained.

The problem remaining was to find a method for producing these stainless steel cones in large volume and in this tough material — ⅛" thick Type 446 chrome-iron-stainless-steel, a 23-30% chromium alloy.

The draw press method was impractical due to the contour of the part and the type of material demanded. A method using a preliminary partial spinning operation and a finishing operation in the draw press produced some satisfactory cones in limited quantities. It seemed unlikely that this method could be improved upon.

Spincraft engineers had designed an automatic spinning lathe which formed deep cones of varying degrees, diameters and depths from a flat disc of various gauges of stainless steel in one draw of the roller tool. This looked most promising at the time for adaptation to the forming of the Type 446 material, although the metal heretofore used on this equipment was Type 305 — a good spinning quality stainless steel.

"Non-spinnable" metal — like glass

The problem confronting television engineers was the forming of ⅛" thick 24° angle truncated cones, 16" in diameter and 11⅛" deep — and out of a presumably non-spinnable metal! It is interesting to note the 1948 Allegheny Ludlum official description of Type 446 stainless steel — "only suitable for applications not involving difficult fabrication." Then again "because of its high chromium content it is less ductile than other stainless alloys and consequently is difficult to draw, spin, form or weld."

The metal was "like glass" which meant that it would wrinkle and fracture at the first firm stroke of the tool. Our engineers felt confident, however, that with the proper set-up this metal could be "run up" in the desired shape in one operation.

An automatic spinning lathe does the job

A special automatic spinning lathe was designed and built, and its "unveiling" awaited with great anticipation. No one doubted its ability to

A 24" rectangular spun shape, compared to a full newspaper.

From blank to cone in one cold operation — less than a minute per piece. Tube shown is a 16" round.

form good spinning quality stainless steel, but this sheet of "glass," Type 446, was another matter. To say that the first piece spun worked like a charm would make the story too good to be true. For a day or two, experienced men wore a satisfied "I told you so" look. However, with surprisingly little scrap during experimental operations, some minor adjustments were made, the rpm and tool pressure controlled. Eventually, veteran spinners, with more than a quarter's century experience, could hardly believe their eyes when they saw this flat disc of presumably unformable metal spun into shape with one continuous stroke of the spinning tool.

Editor's Note:

In the July issue of *finish*, Mr. Hildebrandt described the "Industrial Application of Metal Spinning." This second article represents a description of a specific application of metal spinning—as used in the production of steel TV cones.

Succeeding articles will cover finishing, assembly, and complete production information on the steel television tube.

Production by conventional spinning methods, with multiple annealing and pickling operations, had proved impractical from a cost standpoint. Then, too, by these methods the finished product would still be rough and loss by spoilage and rejection would be high. The automatic lathe produced a surface literally "as smooth as glass," at a rate of thousands per month, with an extremely low spoilage factor. Spincraft, alone, to date has produced well over 2,000,000 such television cones.

Spinning-forming the rectangular "tube"

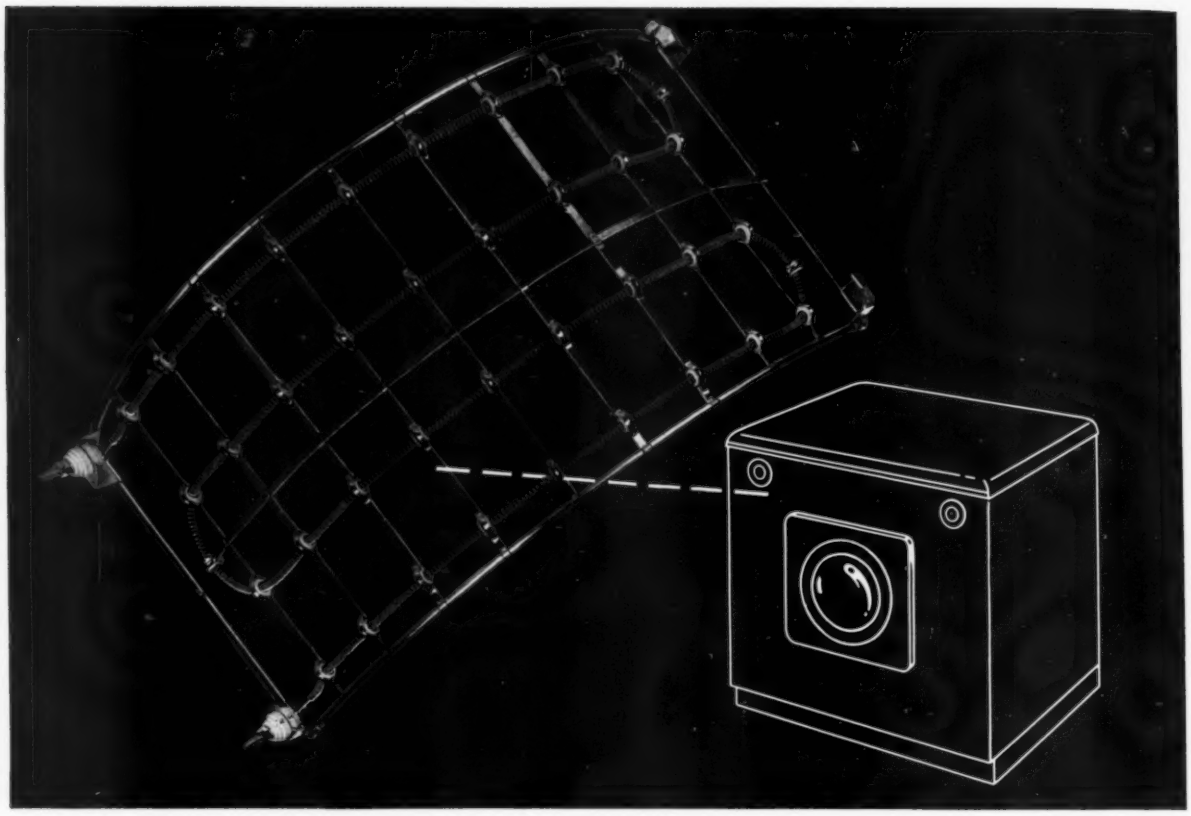
When the television industry changed the face of the picture screen from a round to a rectangular shape, this change in no way lessened the usefulness of the automatic spinning process. The rectangular shell or "envelope" still required a preformed spun cone from which the rectangular shapes are formed. These rectangular shapes would have been extremely costly to form by the use of draw dies alone, since automatic spinning machines were available to perform the initial operation. Today, rectangular envelopes are being produced in 17", 21", and 27" sizes, utilizing chrome iron and carbon steel up to .125" thick.

Constant research by leading cathode ray tube manufacturers has resulted in reducing the cost of the metal television tube. This is possible through the use of less expensive alloys. When chromium was allocated to more vital needs (Type 446 modified, contained 28% chromium), the industry changed to AISI, Type 430 modified, which contains only 17% chromium. This substitute was welcomed by the spinning source because Type 430 was found to be much easier to form than Type 446. Research promises to make possible the use of still less expensive materials.

Use of enameling iron

Metal cathode ray tubes are also being made of vitreous enameling iron with a coating of vitreous enamel for corrosion resistance, plus proper glass sealing. *to Page 74* →

Thousands of round and rectangular tubes ready to be shipped after inspection.



THE ♥ OF A LOVELL DRYER . . .

(Custom built by Ferro Electric)

First duty of a clothes dryer is to *dry clothes safely, quickly, and economically.* Naturally, the "heart" of the dryer is its heating element . . . and when it's electric, you'll usually find a Ferro Electric Heating Unit.

It's no accident that Ferro Units are used by *Lovell* and most other clothes dryer manufacturers. Ferro Units are made by engineers with the best design and manufacturing experience in the electrical heating business—experience that pays off for *Lovell* and other manufacturers in long-lasting, trouble-free units that give maximum heating efficiency at the lowest cost.

Ferro Units are made of high-grade (Nichrome) resistance wire, steatite insulators, carefully crimped into position. By holding welding to a minimum with this exclusive construction, Ferro Units actually "breathe" in use . . . can expand and contract over thousands of heating cycles without distortion.

Make sure you have these advantages in your dryers, or in any other products that require low-cost, long-lasting, electrical heating elements.

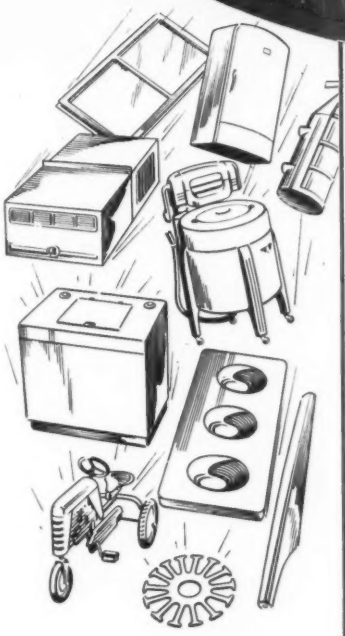
Call in your Ferro Engineer, or write us today for cost estimates or recommendations.

FERRO

FERRO ELECTRIC PRODUCTS, INC.

A Subsidiary of Ferro Corporation

KIRKLAND, ILLINOIS



FROM-BLUEPRINT-TO-SHIPPING-CARTON

LOOK TO NEW MONARCH for SUPERIOR QUALITY

For producing highest quality stampings—where problems change with each new design and special usage—New Monarch is fully prepared, with 3 modern, completely equipped plants manned by specially skilled craftsmen and thoroughly competent engineers.

The most up-to-date processes and facilities enable us to turn out custom quality stampings and fully assembled sheet metal items on a mass-production basis with utmost economy to you.

For more than 43 years, the New Monarch Company has been a major supplier to many of the country's leading appliance manufacturers and has consistently met the needs of the most discriminating customers.

Consultation invited.

When in need of Stampings

MONARCH QUALITY

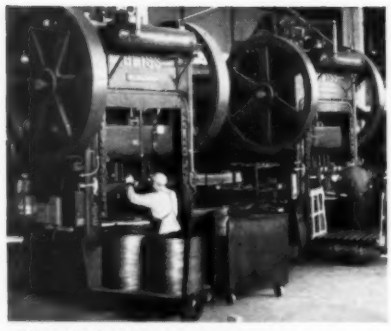
Write today or send blueprints for estimates.

See...

NEW MONARCH MACHINE & STAMPING CO.
406 S.W. NINTH STREET DES MOINES 9, IOWA

Punching 7,000 holes in 90 seconds with the BLISS perforating press!

Each hole precisely located and burr-free on wrap-around stamping for Lovell dryer



TWO NEW BLISS S-2 PRESSES team up at Lovell. Each has 175 tons capacity. At left: forming a dryer inner drum head. At right: piercing a cylindrical exhaust duct.

Take a sheet of 0.037 steel, 19″ x 77″, then pierce out 67% of the area with 7,000 precise perforations. And do it continuously day in and day out at the rate of one every 90 seconds. That's how Lovell Manufacturing Co., Erie, Pa., produces its dryer wrap-around stamping with a Bliss No. 875 High Speed Perforating press. Average speed is 160 strokes per minute with a 64 punch tool.

Press accuracy and rigidity are extremely important to insure exact alignment of the comparatively fragile punches. A specially-designed Bliss feeding mechanism, built-in safety devices and accurate back gages guard against miscuts.

But dependable press performance is not unusual at Lovell. For Bliss presses have been their first choice since 1918. Today, 66% of Lovell's stamping equipment is Bliss-Built. As Tool Superintendent Raymond F. Neider points out, "Our Bliss presses have stood up well under steady operation— often through double shifts. They are rugged, yet easy to operate and maintain. But then they have to be good or we couldn't depend on them as we do."

Next time you have a pressed metal problem, ask Bliss to specify the *right* press for *your* operation. They did it for Lovell and thousands of others.

BLISS on your press is more than a name... it's a *guarantee*

E. W. BLISS COMPANY, Canton, Ohio

PRESSES, ROLLING MILLS, SPECIAL MACHINERY

E. W. Bliss (England) Ltd., Derby, England • E. W. Bliss Company (Paris), St. Ouën sur Seine, France

U. S. Plants in Canton, Salem and Toledo, Ohio; and Hastings, Michigan. *Branch Offices* in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo; and Toronto, Canada. *West Coast Representatives:* Moore Machinery Co., Los Angeles and San Francisco; Star Machinery Company, Seattle. *Other representatives throughout the world.*

Several testing stands are used after final assembly so that each dryer is individually tested, inspected, and recorded for all phases of operation before final crating for shipment.

New facilities speed production of the Lovell drying system

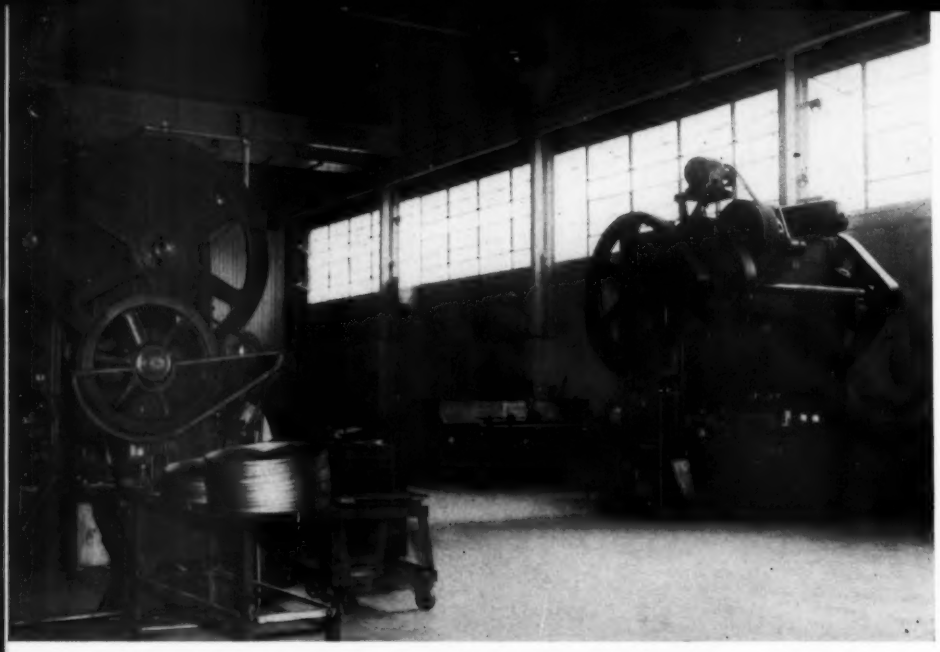
a brief story of fabrication, finishing, assembly, handling and packaging of clothes dryers in the company's new department

by Walter Rudolph

Exclusive feature finish

For years a leader in the manufacture of wringers for many brands of washers, Lovell Manufacturing Company, Erie, Pennsylvania, more recently established itself as a primary influence in the production of electric and gas clothes dryers for the domestic market. Lovell today supplies over 17 nationally-known brands of automatic dryers with its "drying system," a patented product. To speed fabrication, finishing and assembly of the internal or chassis part of its dryers (Berger makes its cabinets), Lovell now uses a new plant addition and facilities.

Maximum output of chassis will now be double the former figure. Formerly parts for these units were made in a press room along with the production of other products. The new department has features such as a large but integrated press room, adjacent to steel storage; several fabricating lines, implemented by modern welding methods; a compact, conveyorized washing and phosphatizing setup; and, finally, an efficient spray painting and drying layout, fully conveyorized, and feeding



Looking toward some of the fabricating equipment in Lovell's new department for making dryer chassis parts.

chassis components to the assembly line.

While the press room is adequately equipped with several large and several small units, there is nothing particularly unique in its layout except perhaps its allowance for future expansion of operations. Steel storage at one end is abetted by a large overhead crane that is operated by press helpers from floor-level controls, or from an overhead runway. The largest press has a 42″ x 108″ bed, enabling progressive die blanking and forming on dryer drum ends, or a complete forming of a 102″ steel channel for the dryer base. A perforating press enables Lovell to stamp thousands of small holes in sheet steel that makes up the dryer drum body, a job that was formerly sub-contracted.

Component handling and sub-assembly

Special tote bins are used for fork truck movement of pieces from the press room to the nearby sub-assembly area. Sub-assembly of chassis parts is largely through weldments, employing several gun and spot welding installations, in line for successive stages of fabrication. Highlighted in this phase of operations, however, are two specially developed submerged arc welders for joining of the axle to the dryer drum, a weldment that must be particularly precise and strong.

Components banked on special conveyor hangers

Another feature of sub-assembly here are four storage conveyors whereon are hung the various chassis components as welding is finished. These storage conveyors move continuously at slow speed, allowing sub-assembly to get ahead of the washing and phosphatizing operations while keeping plenty of chassis parts on hand for these subsequent operations.

Lovell fabricated several kinds of hangers for carrying the various chassis parts on these storage conveyors. The four conveyors double back on themselves as they near the washing and phosphatizing tunnel.

Five-station "washer"

First the pieces are washed at 180° F., followed by a rinse at 160° F.; phosphatizing is then done at 150° F., followed by a cold rinse. Finally, a chromic acid dip at about 160° F., with the entire trip taking from eight to ten minutes while the conveyor moves 8 ft. a minute. Drying is a five-minute operation, at about 365° F., after which the work is conveyed to a 16-foot spray booth.

This painting booth has double gun hookups for the two painters, so they can rapidly switch from aluminum paint, largely used for chassis interior pieces, to black, which is sprayed on base and other hidden parts. The paint is fed to the spray booth by means of a circulating system. Paint is received and used directly from open head drums and fed to the spray booth by means of circulating pumps. Paints used are formulated to meet heat and humidity conditions found in a dryer.

Overhead enamel dryer conserves floor space

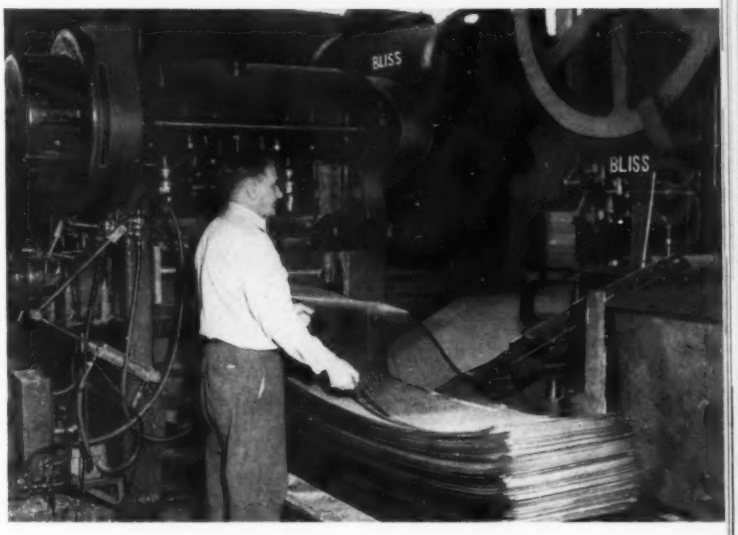
Painting is done to customer specifications, of course, with priming and secondary coatings as required. Drying is done in an overhead oven installation at one side of press room.

Painted chassis components are baked in an oven suspended from the ceil at one side of the press bay.

This drying oven is 8′ x 24′ x 40′.

Final assembly is a well-integrated operation on a roller gravity conveyor, with banks of parts along a route about 100 ft. long, turning at right angles into several short lines preceding tests for temperature and sound. Transfer cars take the dryers from the several short lines, onto four lines for temperature tests, and back to one line for movement through a sound-test booth, and finally onto a short packaging line.

While Lovell fabricates dryer chassis components, Berger Mfg. Co., in Canton, O., produces the cabinets that meet the chassis in final assembly at Lovell. This shows one of the fabricating operations in the cabinet-making sequence.



A new perforating press punches thousands of small holes in the sheet that comprises the body of the Lovell dryer drum.

Design and assembly features

Let's look at design features of the Lovell "drying system."

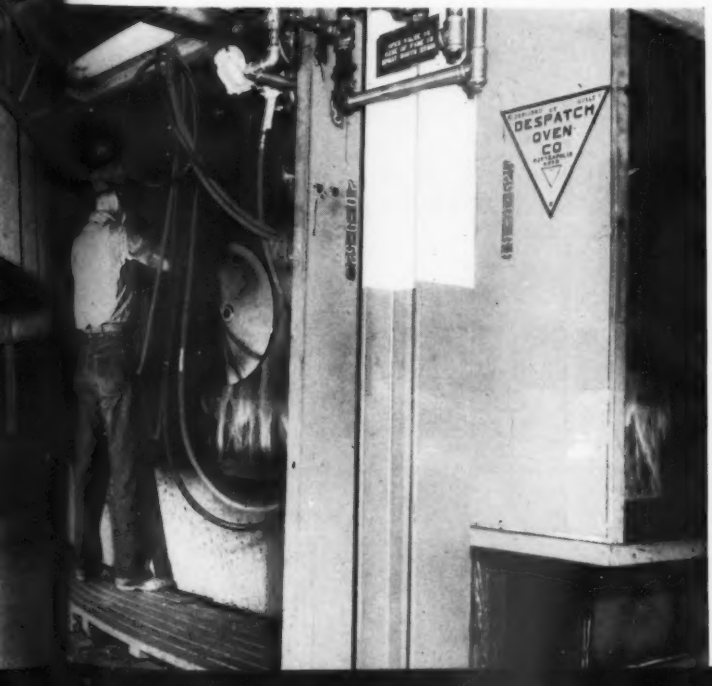
The base of the unit is of channel construction for rigidity and vibration control. A square column which contains the drum bearing is also a unique feature. The exterior surfaces are panels—front, back, two sides and top. Speed fasteners and sheet metal screws (power-tool application) keep assembly effort at a minimum. The top is secured with snap-type flange construction, which allows easy access to the interior for maintenance or repair, and for final testing.

The drum of the unit is of welded fabrication. Perhaps the biggest feature of the entire design here is an exclusive vacuum "drying system." This not only gives thorough drying in as short a time as possible, but permits the dryer itself to be comfortable to the human touch.

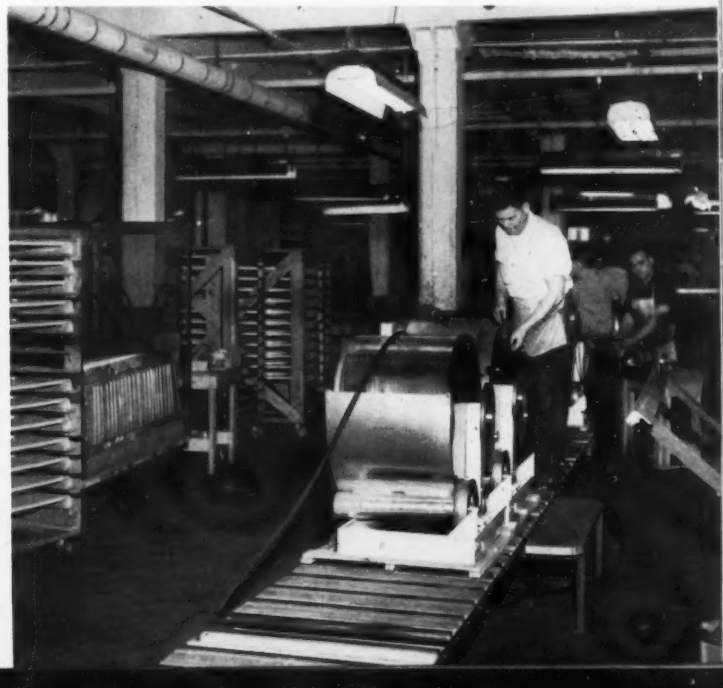
A feature of Lovell's "drying system" includes a nickel-chrome heating element or grid that covers approximately a third of the circumference of the drum. A vacuum blower of a high capacity is used to draw out the moisture ladened air. The air, entering the front of the unit near the base, is channeled in such a way that no insulation is considered necessary.

to Page ST-11 →

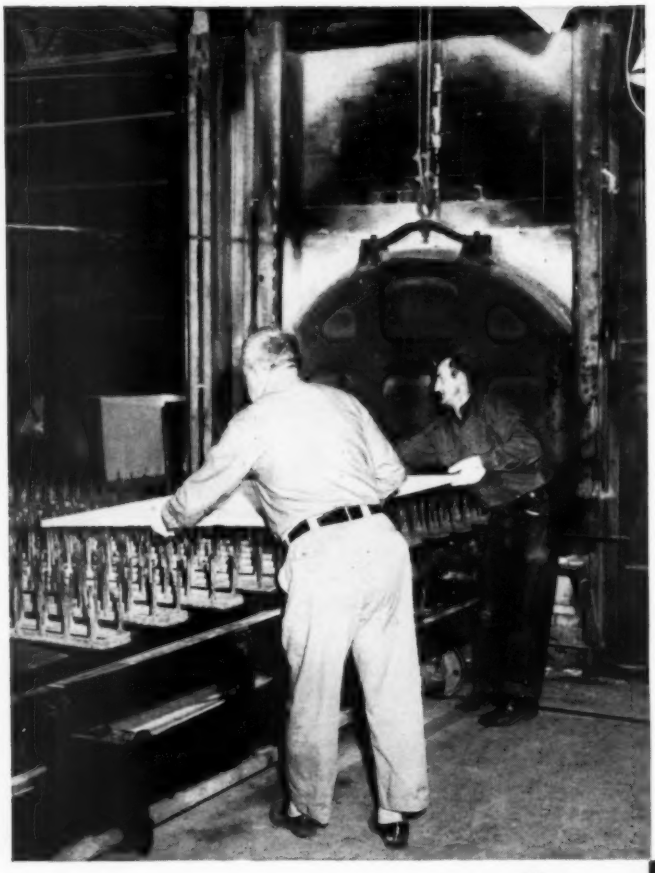
In spray booth, the two operators normally used can turn from one gun to another for quick switch from aluminum to black paint.



Looking down conveyorized final assembly line where cabinets meet chassis components, with power tools speeding the work.



"Refractories by CARBORUNDUM have already outlasted others 2 to 1"



...says William Hammond, who has operated this furnace 22 years

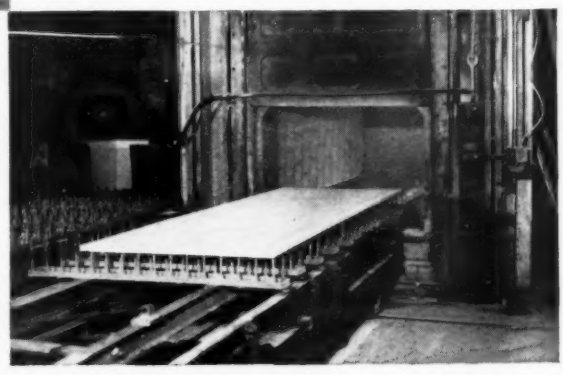
This oil-fired batch furnace has a CARBOFRAX silicon carbide muffle, and MULLFRAX electric-furnace mullite supporting arches. The muffle has had 3½ years' service, and the supporting arches 2½ years. This is now double the life of previous materials used.

William Hammond, operator of this furnace, says: "I'd estimate that these refractories by CARBORUNDUM are still good for a couple of years more. They are far superior to the ones previously used."

Down time has been reduced to one two-week period per two to three years' service. Refractory costs, of course, also have been reduced in proportion to the increased refractory life.

For muffles, support arches, pier facing and leveling brick, grate rests, and burner blocks, check up on super refractories by CARBORUNDUM. They often can increase furnace efficiency, and practically always will cut material and labor costs. Why not write or phone us today?

Operators William Hammond (left) and Charles Ewald (right) load section of sign on rack. This enameling furnace operates 16 hours a day.



Here, the furnace is being charged. Note the CARBOFRAX muffle. It transfers the heat far faster and more uniformly than any other refractory material.

Use Super Refractories by

CARBORUNDUM

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Dept. K-83, Refractories Division

The Carborundum Co., Perth Amboy, N. J.

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may we assist YOU in developing a new item or improving an old one?

Just a word from you, and our engineering and production planning departments will swing into action devising and figuring how to fill your requirements better, easier, cheaper and faster.

During our 87-year existence we have made sheet metal items of not only carbon steel but also of copper, aluminum, brass, bronze, terne plate and stainless steel.

Latest sheet metal manufacturing know-how in our modern plant goes into every job, assuring you custom-made parts or assemblies at the right price. Make SOUTHER your first source for anything made of sheet metal and $ave.

E. E. SOUTHER IRON COMPANY

Fabricators of Sheet Metals

1952 KIENLEN AVENUE ST. LOUIS 20, MISSOURI

Mesh-belt brazing furnace increases production speed

Acklin Stamping increases volume and cuts costs on refrigerator parts; furnace operates 16 hours a day, five days a week

SPEED and costs are vital considerations for Acklin Stamping Company, of Toledo, Ohio, a 100 per cent job shop. Acklin specialized in the production of stamped parts to customer's specifications, and serves manufacturers of appliances, agricultural and automotive products.

In 1950, Acklin installed a small mesh-belt brazing furnace, realizing that efficient, low-cost operation could greatly increase their volume of business. Previously, no brazing was done, but now a complete stamping and brazing operation can be accomplished with over-all savings, which Acklin, in turn, can pass on to its customers.

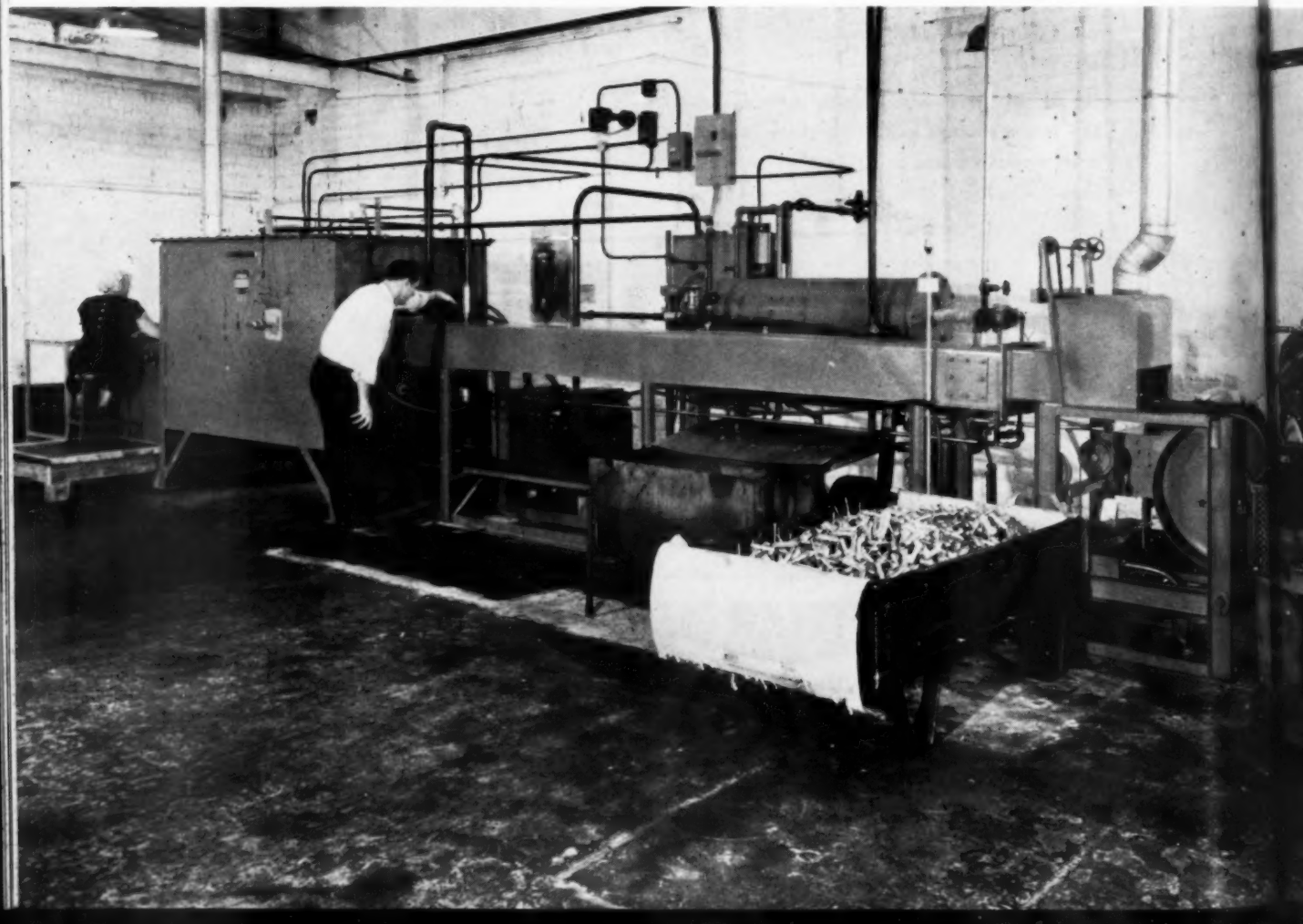
For example, Acklin reduced costs 87 per cent by copper-brazing a refrigerator muffler assembly. It cost them only three cents to braze the assembly using the controlled atmosphere copper brazing furnace, compared to an estimated cost of twenty-four cents for hand arc-welding.

Weight is very important in the industries Acklin serves, and brazing results in important weight reductions.

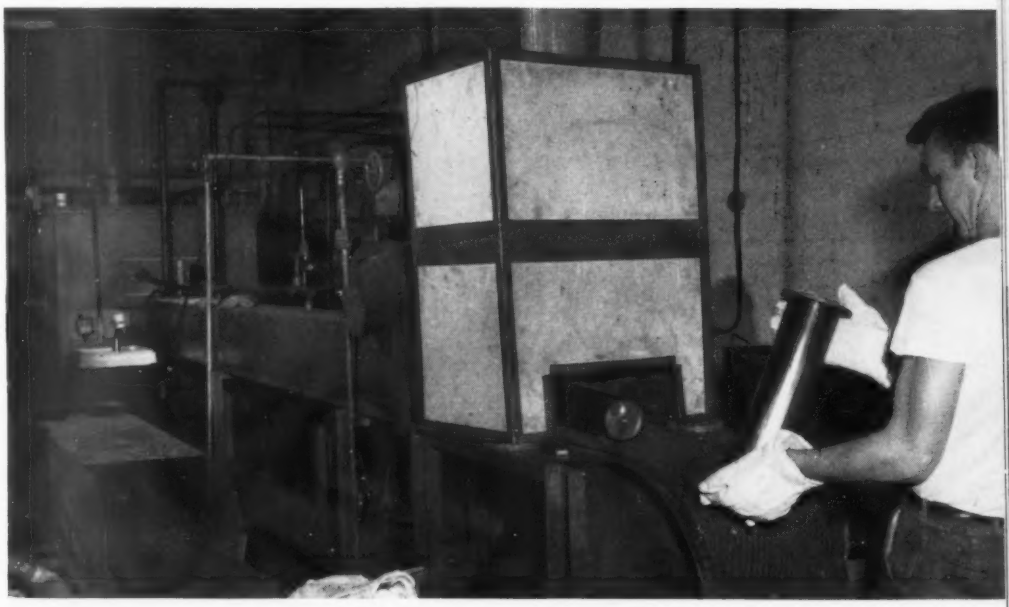
Since installing the mesh-belt furnace, Acklin has had to replace only three elements and two belts, with a total down-time of less than 40 hours.

"Maintenance costs have been less than we estimated," says Philip Wood, assistant to the vice president in charge of manufacturing. The furnace operated 16 hours a day, five days a week. It is rated at 300 pounds gross per hour, and at present the company is getting 325 pounds gross per hour. Production rates include 750 pieces per hour on pistons, and 700 pieces per hour on mufflers.

Overall view of 45-kw mesh-belt copper brazing furnace, showing area where an additional installation is contemplated.



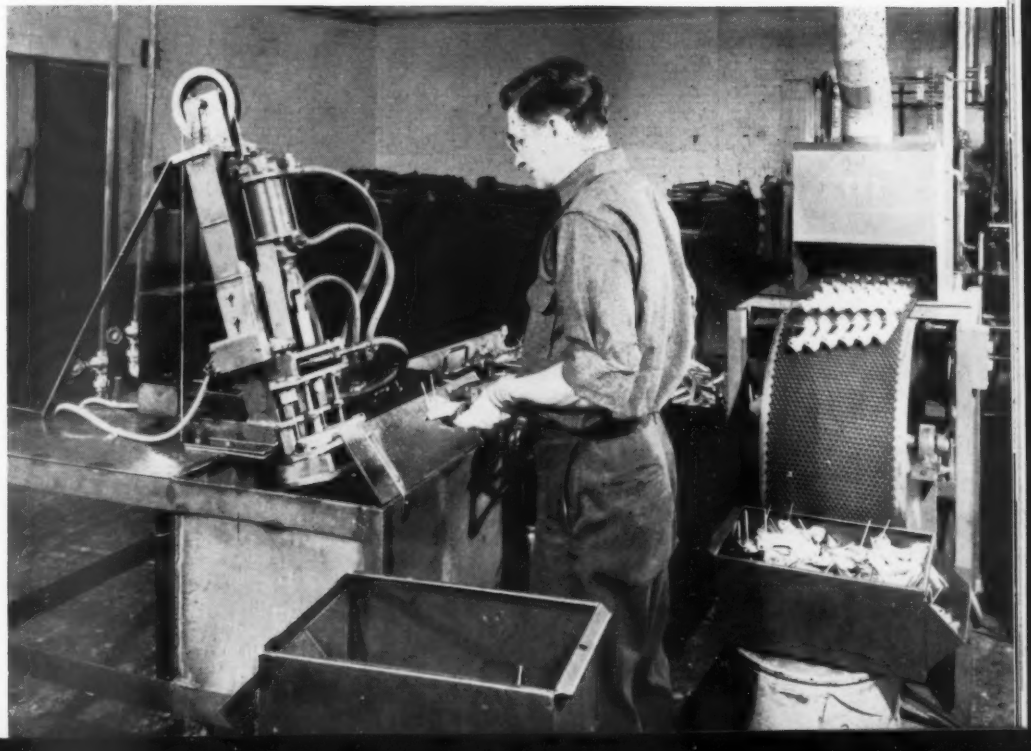
Right: Brazing material being applied to refrigerator mufflers before the stamped parts are loaded into the alloy mesh conveyor belt which passes through the furnace.



Center: Operator is shown removing a brazed piece from the end of the furnace.

Below right: Refrigeration mufflers emerging from the brazing furnace are 100% air-tested at 200 psi.

PHOTOS COURTESY GENERAL ELECTRIC CO.



continuous two-coat PAINT finishing system

OPERATIONS:

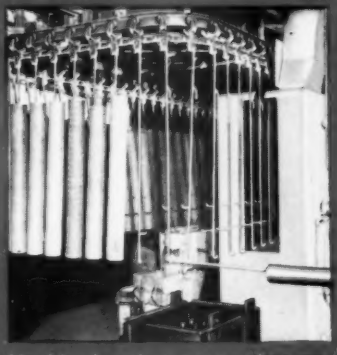
1	Alkali Wash
2	Water Rinse
3	Phosphatize
4	Water Rinse
5	Acidic Rinse
6	Gas Oven Dry
7	Prime Paint Dip
8	Prime Coat Bake
9	Assembly Operation
10	Spray Finish Paint
11	Finish Coat Bake

Cincinnati designed, fabricated and installed for 5" ROCKET MOTOR TUBES

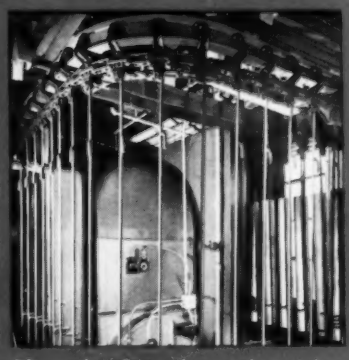
The finishing of metal parts to ordnance specifications is a painstaking technical job designed to insure against finish failure. This Cincinnati installation is a good example of such a job.

Machined steel tubing, 5" in diameter and 49" long, is carefully cleaned inside and out, removing grease, oil, chips and coolant. On a 3 F. P. M. monorail conveyor, the parts are carried through the steps shown. The result is a part finished to rigid specifications.

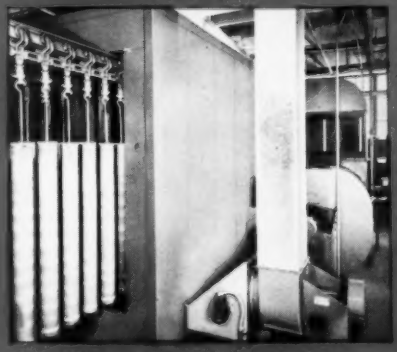
Whether your finishing problem is complicated or simple . . . your parts large or small . . . Cincinnati Engineers can design the equipment you need . . . a complete system or any part.



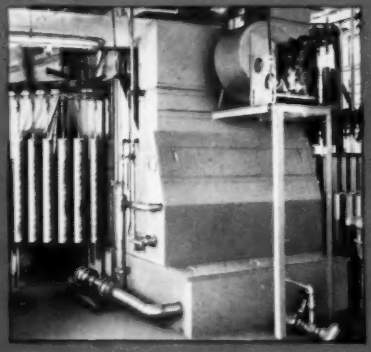
Machined rocket motor tubes entering the cleaning machine at the Koppers Company Metal Products Div., Baltimore, Maryland.



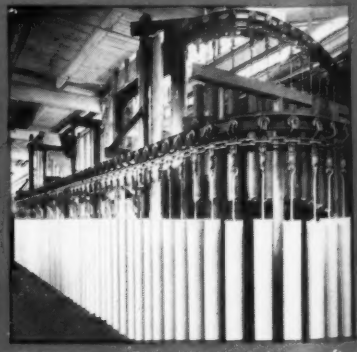
After cleaning, the rocket tubes leave the cleaning machine (left) and enter an oven (right) which dries them prior to application of the prime coat.



Here the parts enter the drying oven after being prime coat painted in a conveyor dip tank. Parts are in this gas heated oven approximately nine minutes.



With the prime coat baked, the rocket tubes enter (at the left) the finish coat spray booth. This booth is designed to accommodate an electrostatic spray unit.



Finished rocket motor tubes, after leaving the finish coat baking oven. In the background is seen the dipping tank in which the prime coat of paint is applied.

A New Catalog, "Complete Finishing Systems," is available on request. Write for your copy TODAY.

Cincinnati

CLEANING AND FINISHING MACHINERY CO., INC.
2004 Hageman Street, Sharonville, Ohio

Metal washing machine at Frigidaire

processes parts on monorail and belt conveyors at the same time

by J. S. McDonald • SUPERINTENDENT, MANUFACTURING PROCESS DEPT., FRIGIDAIRE DIVISION, GENERAL MOTORS CORP., DAYTON, OHIO

A NEW metal cleaning machine, recently installed in Frigidaire's Plant 3, processes parts on a monorail conveyor and belt conveyor simultaneously.

The machine has an "upper" tunnel in which parts carried on the fabricated parts transport conveyor are washed, and a "lower" tunnel through which miscellaneous large and small parts are carried on a wire mesh belt through the washing, rinsing, and drying operations.

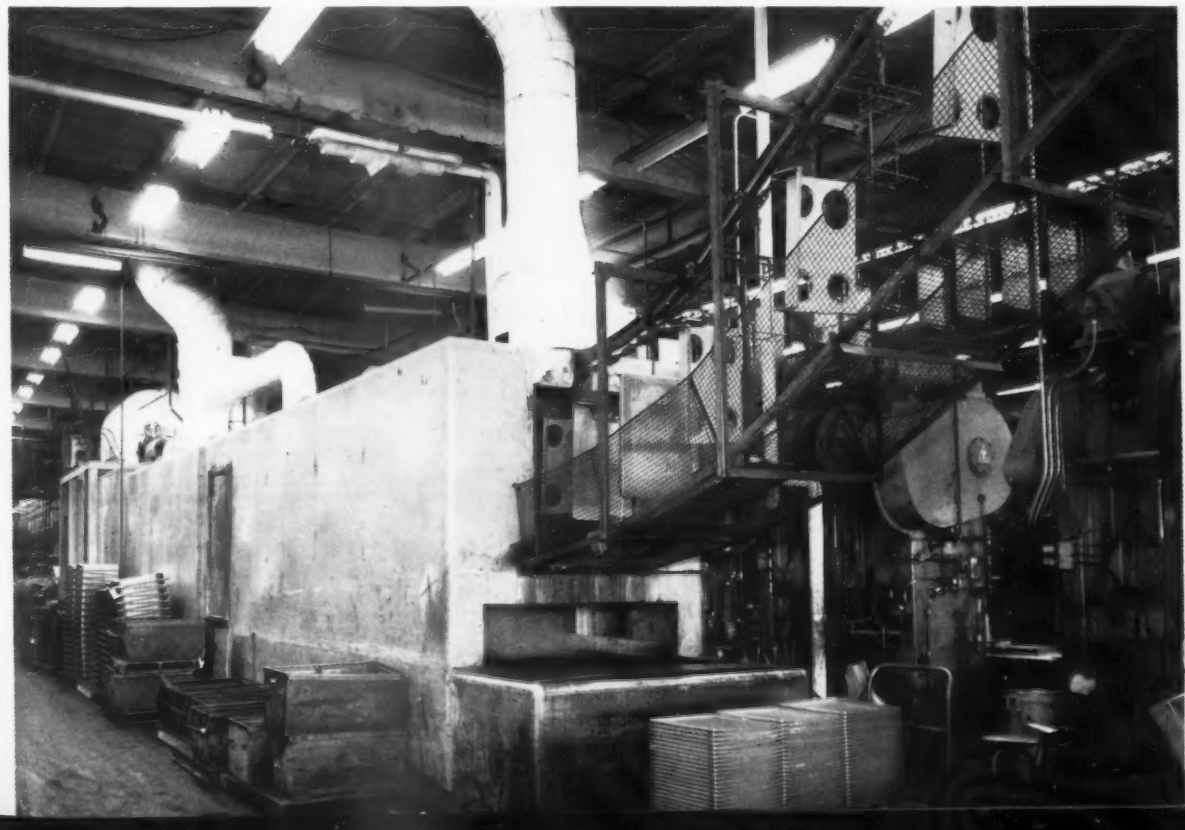
Range, washing machine, dryer, and water heater parts are manually loaded on the conveyor racks after the final press operations. After cleaning, they are unloaded in a bank area ahead of the welding and metal finish operations.

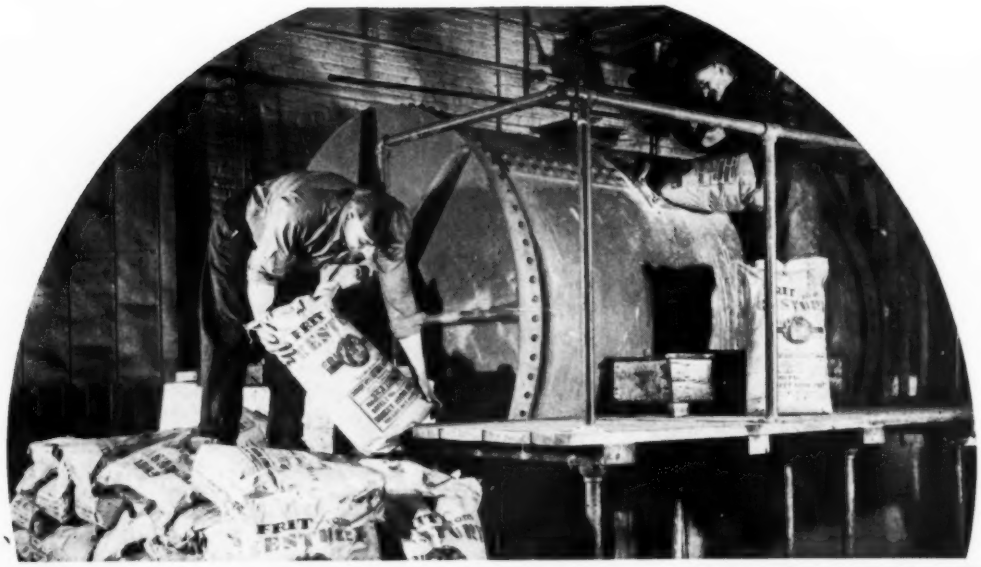
Parts not carried on monorail are loaded manually on the conveyor belt. Following cleaning, they are unloaded at the discharge end of the washer. Since the pressure on the upper and lower sprays can be varied, it is possible to load small parts directly on the belt without the possibility of overturning those with recesses.

At a conveyor speed of 25 fpm, the sequence of operations are as follows: wash 30 seconds, drain 20 seconds, rinse 20 seconds, drain 18 seconds, dry 70 seconds. Since the speed of the conveyor belt can be varied from 10 to 30 fpm, the processing time is as follows: wash 75 to 24 seconds, rinse 48 to 16 seconds, and dry 174 to 58 seconds.

The cleaning solution, which is an alkaline type, is contained in a 3360-gallon tank. From this tank, two 600 gpm pumps supply solution to the spray arrangements in the respective belt and monorail washing sections. With a manifolding arrangement, the solution delivered by both pumps can be applied in either spraying section or divided between the two in any proportion. A similar arrangement is used in the rinsing section with two 450 gpm units pumping from a 2120-gallon tank. Both tanks are heated by 90 psi steam, using steam jets. Float valves automatically maintain the proper solution level in the two tanks.

Air used in drying is heated by a combination oil and gas burner supplying a maximum of 3,000,000 Btu's per hour. Oil is only used in the winter months when the gas supply to industry is rationed. The heated air is recirculated by a 15,000 cfm blower with approximately 2,000 cfm of make-up air being added. Both burners are equipped with safety and temperature control equipment.





OVER 9,000,000 POUNDS

Over 9,000,000 pounds of Century ground coat frits have been prepared for application in this one mill by one of the country's leading manufacturers of fine gas ranges.

This large mill keeps on grinding Century frits, 6,000 pounds at a time, because the frits keep on producing the kind of trouble-free ground coat finishes that keep rejects down and adherence at its best.

It's the "grip" that counts in ground coats. This ability to "stay put" is of great importance to the modern kitchen range and to all metal products finished with porcelain enamel. Century *time-proved* frits will give *your product* this same advantage and you can be *sure* of your enamel adherence.

You take no chance in specifying Century *time-proved* ground coat frits, except a good chance of saving money in enamel plant operating costs.

Arrange now for a trial run of Century *time-proved* frit.

* *Century produces a complete line of ground coat and covercoat enamels for all types of production porcelain enameling.*

FRIT from CENTURY

FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY

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A page from the Illini Ceramist

Illinois Chapter Student Branch of American Ceramic Society, publishes 1953 annual—written, published and financed by the ceramic students

"THE Illini Ceramist", University of Illinois ceramic engineering student publication, was reinstituted in 1950 by Prof A. W. Allen, advisor to the Illinois Chapter, Student Branch of the American Ceramic Society.

It had previously been published annually during the period 1937-41, with the late Prof. C. W. Parmelee as advisor. The post-war editions have featured a modernized format, somewhat larger budget, and more extensive advertising campaign. A $700 budget is supported by advertising and the sale of subscriptions.

All of the work is done by students under the direction of Professor Allen: copy writing, proof reading, layout, type specifications, printing contracting, advertising correspondence, etc. Photography is done by the students from start to finish.

In addition to reporting the activities of staff and students, the annual has become an alumni news letter. News of alumni from classes of 1913-1952 are reported in the current issue.

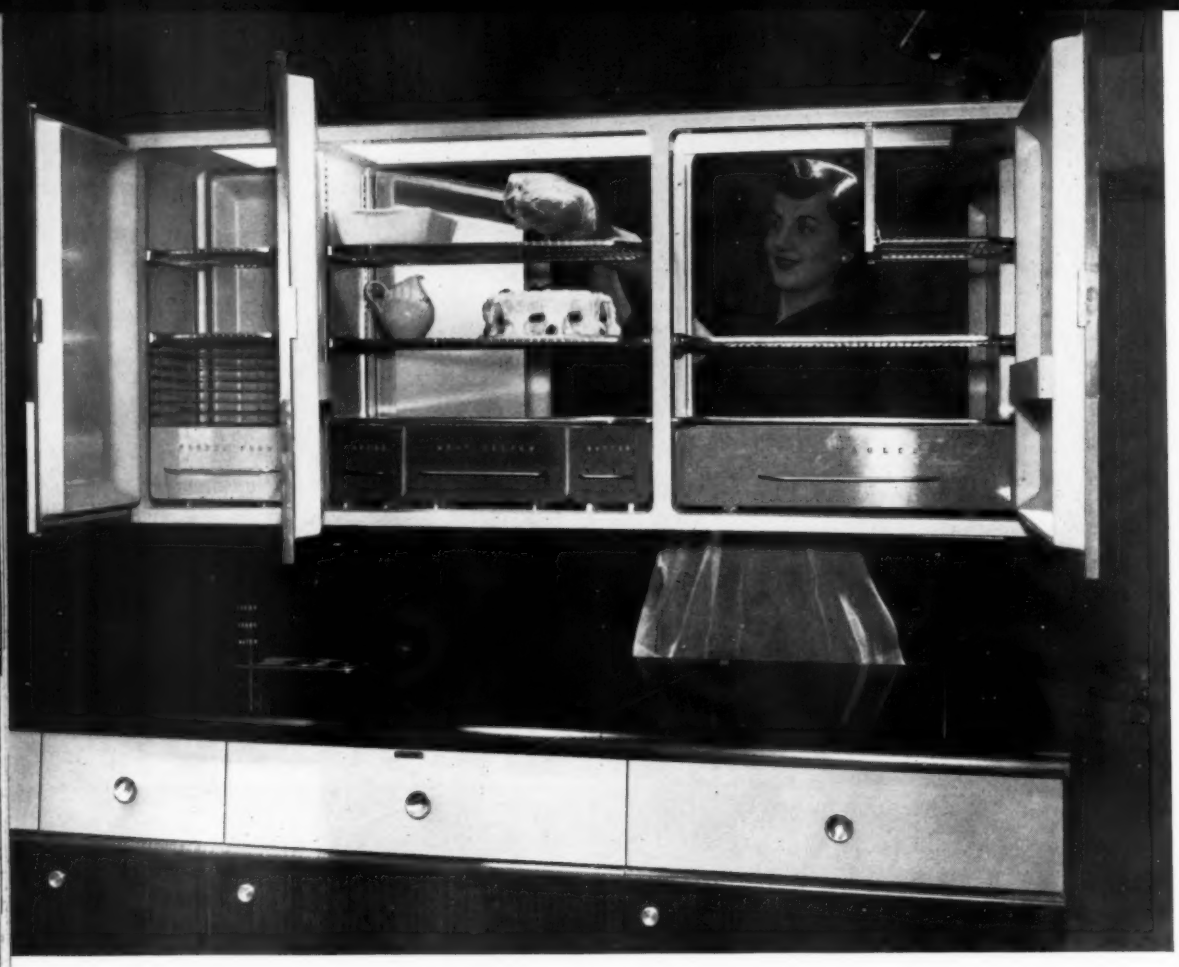
Reproduced below is a page from the 1953 edition.

Editing the 1953 Illini Ceramist, l. to r., Robert Cowan, editor-in-chief; Richard Anderson, advertising manager; Clarence Hoenig, business manager.

Research Staff

Left—top to bottom: D. G. Bennett and W. J. Plankenhorn, T. A. Willmore, D. Marshall, and J. Kyonka.

Right — top to bottom: A. L. Friedberg, G. F. Stockdale, R. W. Bristow, and R. H. Dungan.



Possible refrigerator-freezer of the future, designed by General Electric, has two fronts, for one of the sides is designed to be opened from the kitchen area and the other from a living or dining area. Doors are magnetically sealed and have no handles, but are opened by means of finger grips at the base. The XR-10, as it is called, is described as "experimental only."

What design means to the customer

including the importance of proper timing in bringing out new appliances

by A. N. BecVar • MANAGER OF PRODUCT PLANNING, MAJOR APPLIANCE DIVISION
GENERAL ELECTRIC COMPANY, LOUISVILLE, KENTUCKY

"DESIGN" is a term that is used freely and means many things to many people. In the manufacturing plant, "design" applies to the engineering area, but the general public considers "design" as incorporating both the outward manifestations of engineering and the appearance characteristics of a product. Consequently, good design is beneficial to a product because it insures greater satisfaction to the customer, and it also helps the manufacturer sell his product.

Good design expresses good quality. For example, the mechanical parts can be excellent, but if some of the structure does not reflect the same quality (such as a thin door or flimsy latch), the whole product is not considered of high quality level by the average consumer. The public recognizes only the outward appearance of good engineering as part of design through quiet operation, long life, ease of control and ease of maintenance.

It is interesting to consider what a product would be like if designed solely by the engineer or the manufacturing man or the finance man, the product service man, the salesman, or the appearance designer. Good design requires the collaboration of each of these men. If design is dictated by any one of them, a distorted product would result because each specialist would unconsciously emphasize his own area of work.

It is important that all concerned with the product start on equal terms at the inception of the program so that each can argue for and agree upon the necessary contributions of

each other. The final coordination must be guided at management level to balance and properly weigh each factor.

In the early days of our company, we produced a refrigerator called the "Monitor Top." The refrigerating unit was mounted on the top. This was and still is a very sound engineering principle. The problem of cleaning and its appearance soon pointed to the customer preference of putting the unit in the base and making a simple, straight-forward cabinet that would fit into the present concept of a kitchen.

One of the most important elements in the major appliance business is having a product that is equal to or in advance of competition measured by consumer acceptance. It must be available at the proper time and be manufactured and sold to yield a reasonable profit.

This is a continuous collection, recording, and evaluation of all product information. Everyone in our business contributes the talents, ideas, and the facts related to our products. It is the funneling of this collection down to a specific product plan that integrates the marketing requirements with engineering development and manufacturing methods to consumer needs at the prices he will pay.

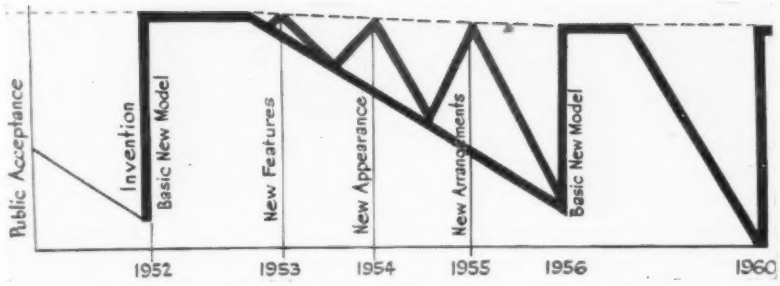
Value of consumer research

We are continuously finding out through customer research the objectives that will satisfy the market. These specifications are then turned over to specialists who develop these requirements into the design, engineering, and manufactured product. This is when the appearance designer and the engineer and the manufacturing man develop the best solutions to contours, textures, safety elements, convenience aspects, sales appeal, and ease of maintenance and service of the product.

Four "ages" of a product

It seems that products pass through the following stages in their lifetime:

1. pioneering
2. competing
3. retaining
4. declining



This chart shows what often happens to a new appliance after it is introduced to the public. Minor changes are made the following three years to stimulate declining consumer interest. Then another basic change is introduced to make it rise again in public acceptance.

We can all appreciate that design is relatively more important in certain products than it is in others. No product, however, escapes the influence of good design which is considerably more important in the competing and retaining stages principally because they are the periods when all things are most equal, and it is then that the customer is influenced by "good design."

What happens to an appliance in terms of public acceptance

What happens when a new product is introduced to the market in terms of public acceptance? Initially, if it contributes a real consumer service and need, it rises high in public acceptance. But that unique spot is held for only a short time because competition very quickly moves in and equalizes the gain.

Thus, it starts to decline until another basic change makes it rise again in public acceptance. Competition again equalizes it, and thus this general curve is followed during the life of the product.

Major changes usually involve new tools and plant layout; consequently, these basic changes are introduced not every year, but about every three to five years.

Building public acceptance

It becomes imperative to use other methods during the "in between" years to build up public acceptance. These are the years when it is necessary to have advanced features added, new appearance with minor tool changes, and color changes to spark up the product.

Let's take a look at what has happened in some of the large consumer industries: for example, the automotive industry.

During recent years, such features as push-button windows, automatic gear shifts, new colors, new interior fabrics and new exterior contours have been added in the present day car. This industry is especially geared to obsoleting present products with something new and has influenced and accelerated the era of yearly change in all consumer products.

Another field in which there have been remarkable strides in styling and yearly change is the women's clothing industry.

In the appliance industry, we too are geared to frequent change. Compare an early electric range with one of today. Extra features and trim have been added to appeal to the mass market and create obsolescence.

There have also been startling changes in the styles and design of refrigerators. →

A. N. BECVAR

Compare our "Monitor Top" refrigerator with a smooth-surfaced modern one. The consumer's view of the refrigerating unit on top was abolished to satisfy the desires of women.

Consider our new experimental refrigerator, the XR-10, to see what future refrigerators may look like. This possible refrigerator-freezer of the future has two fronts, for one of the sides is designed to be opened from the kitchen area and the other from a living or dining area.

Why have all these products changed with the accent on feature, trim and newness? Here is a design philosophy we use to make sure that our products appeal to the greatest number of people.

Spheres of influence in design

I believe there are two spheres of influence in design. One sphere represents lavishness in design. Products in this sphere incorporate glitter and ornamentation, whether good or bad in their design. The second sphere represents the aesthetic taste in design. Objects in this sphere are of functional and advanced appearance, whether in good or bad taste. Each of these spheres represents an appeal to a limited market.

For example, in the sphere of lavishness in design, borax furniture and credit store jewelry have the appeal of lavishness, but they are desired by a limited market. So too in the sphere of aesthetic taste. Extremely modern furniture and Georg Jensen silver have a limited market appeal.

The design objective

Where both of these spheres overlap, there is an area which is called design objective. Such objects that fall in this area have the best qualities of both spheres of design, and as a result, appeal to people in each sphere of influence — and represent the preference of the mass market.

Now, let's take a look at the trends of customer acceptance which are continually changing. Consider today's houses which are examples of both extremes of acceptance of design by the public: the Victorian concept of a house with its highly ornamented style . . . the stately Colonial house . . . the intimate Cape Cod . . . the free and easy Ranch type . . . and the "modern" house.

Now all of these express a degree of what people will accept in a house. The tolerance is from the Victorian up to the "modern" which is today the limit of tolerance. The major public preference still lies in the Cape Cod or Ranch styles.

As the years progress, there is a continually-advancing degree of tolerance. It is important to recognize that what the public deems acceptable in design in a given year does not automatically follow for the coming years. So you will see this tolerance defined as between the lag line and the limit of tolerance in 1953. In 1954, the limit of tolerance advances, and so on each succeeding year. If designs are made too close to the lag line; when the public acceptance shifts, the products falls outside of the limit of acceptance. Therefore, it is desirable to design toward the upper limit of acceptance.

Adapted from a presentation before The AIEE Appliance Technical Conference.

"SOMEBODY MADE A MISTAKE ON THIS RANGE—IT'S GOT A TELEVISION SET IN IT."

PORCELAIN ENAMEL INSTITUTE SEEKS RESEARCH FELLOW

With the resignation of its research fellow, George A. Warren, who is leaving to accept a position with The Pfaudler Company, the Porcelain Enamel Institute is now receiving applications for this research post.

The Research Fellowship has been maintained almost continuously at the National Bureau of Standards, Washington, D. C., for over 17 years. It is currently engaged in the development of test methods and equipment for evaluating the properties of porcelain enamel.

MILL LINING

requires the skill of experienced masons

When it comes to mill lining there's no substitute for experience. It's one of those jobs where haphazard guesswork just can't be tolerated. For over a quarter of a century, HUYCK Construction Company has been serving the porcelain enamel industry — lining new mills and re-lining old ones . . . building new furnaces and re-building or repairing old ones. HUYCK does the whole job, anywhere — furnishes the brick; does the job well; finishes it on schedule! Yes, HUYCK masonry is engineered masonry by skilled technicians. So, whenever any industrial masonry looms ahead—new or maintenance—people just naturally turn to HUYCK. It will pay you to do likewise.

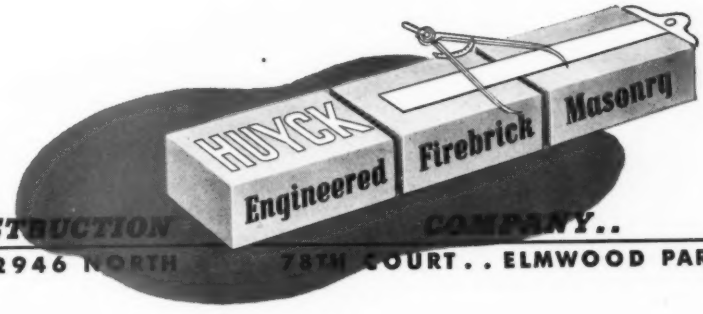
HUYCK BUILDS, REBUILDS, REPAIRS ALL TYPES OF:

ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.

HUYCK *LINES AND RELINES MILLS*

HUYCK MEANS *MASONRY*

HUYCK *MASONRY IS GUARANTEED TO GIVE YOU BETTER PERFORMANCE AND LONGER LIFE*



Huyck CONSTRUCTION COMPANY..

2946 NORTH 78TH COURT . . ELMWOOD PARK 35, ILLINOIS

Here's Positi

MILLS PRODUCTS • INCORPORATED
MANUFACTURERS OF PERMA-VIEW Sealed OVEN DOOR WINDOWS

1015 WEST MAPLE ROAD
WALLED LAKE, MICHIGAN
TELEPHONE MARKET 4-2256

MAY 11, 1953

MR. DANA CHASE
FINISH MAGAZINE
360 N. MICHIGAN AVENUE
CHICAGO 1, ILLINOIS

DEAR MR. CHASE:

NOW THAT WE ARE ROUNDING OUT OUR THIRD YEAR OF ADVERTISING IN FINISH, WE THOUGHT YOU WOULD BE INTERESTED IN RECEIVING A REPORT ON THE RESULTS WE HAVE ACHIEVED. AS YOU KNOW, WE HAVE DEPENDED ON FINISH TO DELIVER OUR SALES MESSAGE DURING THIS THREE-YEAR PERIOD.

I REPORTED TO YOU AT THE END OF OUR FIRST YEAR OF ADVERTISING THAT THE NUMBER OF GAS AND ELECTRIC RANGE MANUFACTURERS USING OUR PERMA-VIEW SEALED OVEN DOOR WINDOW HAD DOUBLED. I AM HAPPY TO SAY THAT THE SECOND YEAR OF OUR CAMPAIGN SAW A CONTINUED INCREASE IN CUSTOMERS AT THE SAME RATE. NOW, AS WE NEAR THE END OF OUR THIRD YEAR OF ADVERTISING IN FINISH, I AM PLEASED TO TELL YOU THAT WE HAVE QUADRUPLED OUR PRODUCTION AND SALES SINCE FIRST STARTING OUR ADVERTISING CAMPAIGN. IN THE MEANTIME, AS YOU KNOW, WE HAVE BUILT A COMPLETELY NEW PLANT TO HANDLE OUR INCREASED PRODUCTION REQUIREMENTS.

FEEL FREE TO USE THIS LETTER IN ANY WAY YOU WISH, AS WE WHOLEHEARTEDLY RECOMMEND FINISH TO ANYONE INTERESTED IN SELLING THE APPLIANCE INDUSTRY.

YOURS TRULY,

MILLS PRODUCTS, INC.
Herbert E. Mills
HERBERT E. MILLS

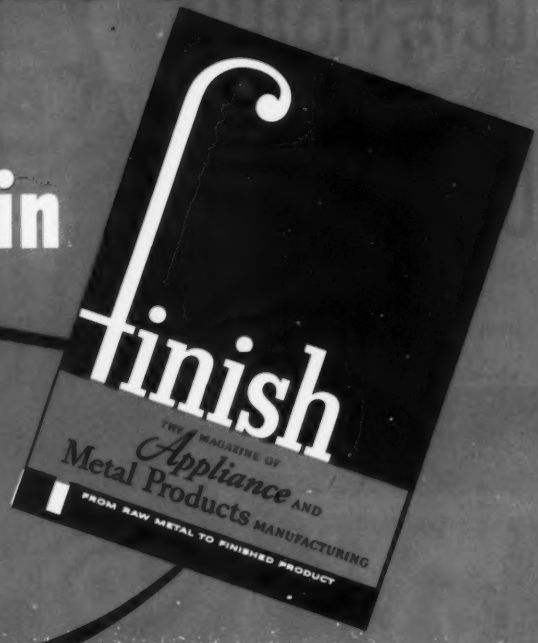
HEM/LB

CLEAR VISION ALWAYS

ive Proof...

DVERTISING RESULTS

....the story of PERMA-VIEW advertising in



400% increase in sales in 3 years

The first **PERMA-VIEW** ad appeared in July 1950 *finish*. Mills Products, Inc. has carried a continuous campaign of one black and white page each month for three years except for one month when a two color spread was used.

What were the results of this continuous campaign?

100% increase in number of accounts served, and inquiries from all over the world, within the first year. The second year saw a continued increase in customers at the same rate.

The accompanying letter tells the story of a 400% increase in sales—within the span of a three year advertising campaign.

Here is one of the rare instances where advertising results can be definitely measured . . . because . . . Mills Products, Inc. travels no field men, all contacts being made by the principals from the factory . . . and . . . *finish is the only advertising medium used for promoting PERMA-VIEW windows.*

Here is *POSITIVE PROOF* that if you have the right material, equipment, component or service for the home appliance and metal products manufacturing field . . . and present it properly in *finish* . . . the men who engineer and build the metal products plus those who purchase for and manage the producing plants will respond.

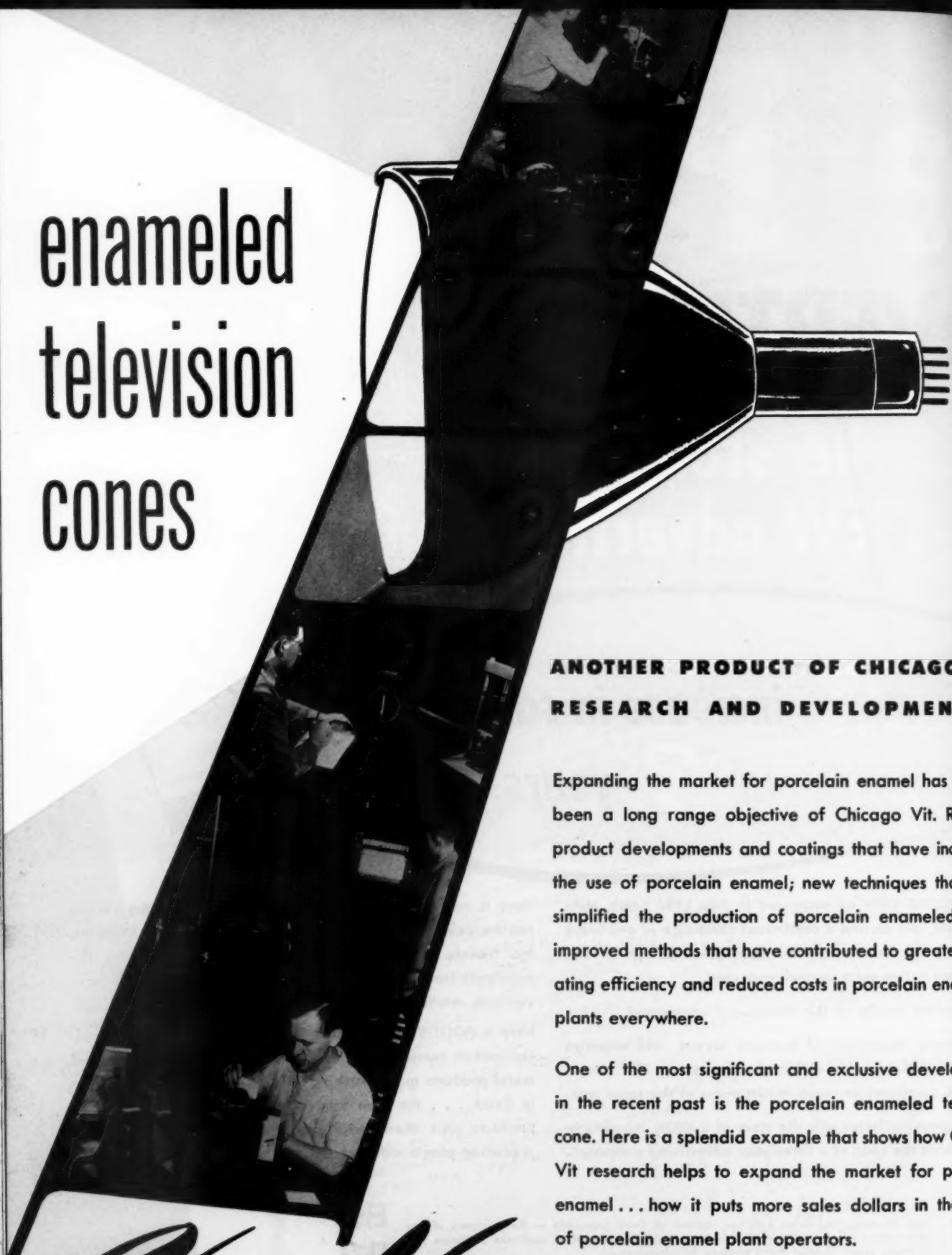
NOTE Mills Products, Inc. serves only one segment of *finish* readership — the producers of gas and electric ranges — *finish* circulation covers the key men of *all* appliance producers plus a broad group of other metal products manufacturers.

CCA NBP

finish

the only industrial trade publication completely blanketing the home appliance and allied metal products industries

enameled television cones



ANOTHER PRODUCT OF CHICAGO VIT RESEARCH AND DEVELOPMENT...

Expanding the market for porcelain enamel has always been a long range objective of Chicago Vit. Result—product developments and coatings that have increased the use of porcelain enamel; new techniques that have simplified the production of porcelain enameled parts; improved methods that have contributed to greater operating efficiency and reduced costs in porcelain enameling plants everywhere.

One of the most significant and exclusive developments in the recent past is the porcelain enameled television cone. Here is a splendid example that shows how Chicago Vit research helps to expand the market for porcelain enamel . . . how it puts more sales dollars in the hands of porcelain enamel plant operators.

Chicago Vitreous Enamel Product Co.

1407-47 South 55th Court • Cicero 50, Illinois

CHICAGO VIT . . . THE INDUSTRY'S SOURCE OF SUPPLY FOR T. V. CONE ENAMELS

Summer homefurnishings market finds mid-year prospect — GOOD

CONTINUED good business in the appliance industry was the opinion of industry spokesmen attending the Summer Homefurnishings Market held in Chicago, June 22 through July 3, at The Merchandise Mart and the American Furniture Mart.

"Business looks good." Those few words just about wrap up the situation as far as major appliances are concerned, stated J. F. McBride, manager of marketing for General Electric Company's major appliance division, at an appliance press conference at the Mart.

Eugene Tracey, vice president in charge of air conditioning, Mitchell Manufacturing Company, and Seymour Mintz, vice president of Admiral Corporation, concurred with McBride on the outlook for appliances.

Inventories lower than year ago

Inventories at all levels are generally lower than they were a year ago, but are up slightly from the first of the year, declared McBride. Retail sales of refrigerators have started their annual seasonal peak season, and are pulling other appliances with them. "This will tend further to reduce inventories," he stated.

McBride said that General Electric expects "to wind up the year with a better retail sales picture than we had in 1952 and last year's results were about 1 per cent ahead of those for 1951."

Muntz pointed out that the TV industry produced at a record pace for much of the first half of the year, and said that indications in the general business situation show that TV sales will continue high—if manufacturers and distributors and dealers are willing to work.

As to talk about saturation, Admiral's sales figures for the first half of the year showed that more than half of their receivers were sold in the 38 markets which have had no new stations at all. And these 38 markets showed an increase of 20 percent from last year. "Our attitude is that the four out of five families in many communities who own sets are completely sold on television and that our job is to sell them on modern, big screen television, and also to sell two-set ownership.

Room air conditioning growth of vital proportions

Tracey asserted that "there seems little doubt that the room air conditioning industry is showing a

to Page 71 →

Three pages of market photos →

Miss Diana Davis was on hand at Detroit-Michigan's space in the American Furniture Mart to point out sales features of their Top-Vue gas range.

finishfoto

Exclusive finishfotos

from International Homefurnishings Summer Market

Left: "Go with the Pros" is theme of Westinghouse sales promotion. Helping to give it a sendoff are Miss Inge King and Robert A. Guichard.

Right: Cribben & Sexton new promotion features the Pied Piper theme. In Pied Piper's costume is Miss Evelyn Mac...

Left: Ryan Industries introduced Freezette, plus Freeze Pantry which has

Right: Crosley introduced new home laundry equipment which the company recently introduced to fill out its line of major home appliances.

Right: W. Frank Smith and Jack Moore, Ironrite regional sales managers, shown with new ironer which can be folded up for easy storage.

the Pied Piper theme. In Pied Piper's costume is Miss Evelyn Mee.

Left: Ryan Industries introduced Freezette, plus Freeze Pantry which has 11¼ cu. ft. refrigeration space, and 14¼ cu. ft. freezer space. On right is C. T. Stafford, gen. sales manager.

Right: Robert McCambridge, right, of Hamilton, shows off their recently-introduced automatic washer and companion dryer.

Left: Dan Nighswander, Thor product manager, and Miss Beverly Long, shown with Thor's new refrigerator and custom-made electric range.

Right: L. L. Frank, left, of Whirlpool, shows a dealer their new washer and dryer which will fit in a 49"-wide space.

Left: H. A. Weliver, left, of Kelvinator, shows off features of their new home laundry line.

Right: Sunray used greatly enlarged space at Furniture Mart to show their line of Sunray and Grand ranges. On left is Geo. E. E. Mumma, Sunray president.

Fashion-colored ranges were introduced at Merchandise Mart by Dortch Stove Works which showed range models in bright red, mint green, and yellow.

"Hands off" describes the "floating action lid" feature of Deepfreeze home freezers. The exaggerated, but pleasant to look at, illustration shows how the home freezer lid floats to fully-opened position with release of fingertip latch.

This bevy of beauties represents finalists in the Miss Furniture of 1953 competition at American Furniture Mart. All are regularly employed in homefurnishings industry. They are, left to right: Betty Bird, Douglas Furniture; Marylu Payne, Northwestern Cabinet; Rita Chmura and Joan Mansfield, both of Hadley; Abbie Daniels, Great Plains Furniture; Jeanne Hedrich (Miss Furniture), Montgomery Ward; Marian Palm, Arkwright; Carol Joost, LaFrance Industries, Virginia Allen, Murray Bernard Industries; Ruth Govoni, Weiboldt; Beverly Brady, Norge; and Connie Mitchell, Hotpoint.

"National security is impossible without financial security of individual citizens . . ."

FRED MAYTAG
The Maytag Company

"Ingenious research and the ability to produce . . . which have helped to make the United States the world's greatest nation . . . could not have been realized without the savings of millions of thrifty persons. Savings of individuals financed new inventions, developed others. The Payroll Savings Plan for purchasing Savings Bonds regularly provides an easier way for American workers to save for future spending or investment, for their own security, and for their nation's security. Our experience at the Maytag Company has shown us that a successful Payroll Savings program can be the foundation and the cornerstone of happy employee relations."

Let's point up Mr. Maytag's concise summary of the Payroll Savings Plan with a few very recent figures:

• at the close of February, 1953, the *cash value* of Series E Bonds held by *individuals* reached a new high: $35.5 billion. This is $1 billion more than the value of the Bonds held on May 1, 1951, when E Bonds began to mature.

• to this encouraging reservoir of future purchasing power, 8,000,000 Payroll Savers are adding $160,000,000 per month by their consistent investment in U.S. Savings Bonds.

• unit sales of E Bonds in 1952 reached the highest level of the past six years—more than 77 million individual pieces. Of the 77 million units, 67 million were in the $25 and $50 denominations—the bonds bought chiefly by Payroll Savers.

• Payroll Savers are serious savers—of the approximately $6 billion Series E Bonds which had become due up to the end of March, $4.5 billion, or 75%, were retained by their owners beyond maturity.

If you are not among the 45,000 companies that make the benefits of the Payroll Savings Plan available to their employees . . . or if you do have a Plan and your employee participation is less than 50%, a telegram or letter to Savings Bond Division, U.S. Treasury Department, Washington Building, Washington, D. C., will bring you all the information and assistance needed to build a *good* Payroll Savings Plan.

The United States Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

NOW fewer finishing rejects

Binks NEW AO-120 Oil and Water Extractor works where others fail

Binks new AO-120 Extractor assures more thorough removal of oil, water, rust, dirt, and other impurities from air used for spray finishing. Here are the features responsible for the higher air-cleaning efficiency:

spiral baffle flings out impurities

When air enters the AO-120 Extractor, it strikes a metal baffle and immediately begins a fast spiral down the tube. As the air rotates, centrifugal force flings heavy particles of moisture, oil, rust and dirt out of the air stream. Impurities so removed drop to the bottom of the extractor for draining.

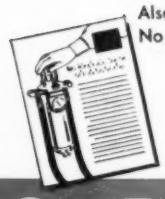
unique filter provides DOUBLE action

After leaving the baffles, the air makes a 180° turn and enters the filter. This special absorbent filter not only *screens* out foreign matter but also *absorbs* all moisture and fluids. The Binks filter is so effective that the AO-120 Extractor has proved suitable on lines where the amount of oil and water have been too great for other extractors.

Only Binks AO-120 Extractor combines both baffling and filtering in this way. Get full details today.

SEND for Bulletin AO-120

This bulletin tells why an extractor is imperative for fine finishes. Also how the AO-120 Extractor simplifies maintenance and saves time. No cost or obligation. Simply mail the coupon TODAY!



Binks

EVERYTHING FOR CERAMIC FINISHING

For Bulletin AO-120, MAIL COUPON TODAY

Binks Manufacturing Co.
3122-40 Carroll Ave., Chicago 12, Illinois

Gentlemen: Please rush my FREE copy of your Bulletin AO-120 telling how your new extractor cuts finishing rejects, saves time and money in other ways, too. I understand there is **no obligation of any kind.**

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE____

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

New Supplies and Equipment

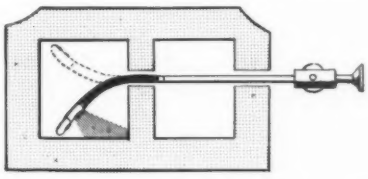
H-10. "Breather" plug for internal ventilation in refrigerator doors

New This new spring stamping is designed to provide for internal ventilation in the doors of refrigerators and the lids of freezers.

Although specifically designed for use in refrigerator and freezer units, a plug of this type may be used wherever there is a need to cover a hole in sheet metal or plastic units and yet provide for air passage or easy access. Sizes to fit ⅞" and 1" holes are available. The plug is installed by pressing it into the hole with the fingers. No special tools needed for assembly or removal.

H-11. Inspectorscope for use in inspecting "blind" areas

New This ingenious tube fits through a ½" opening. It contains a complex set of tiny lenses. As many as 60 of these tiny precision



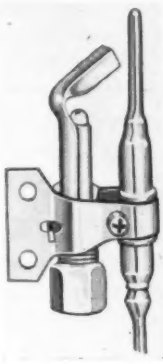
lenses reflect the image back and forth to the inspector's eye. A strong light illuminates the area looked at. To fit around corners, a control wheel on the handle curves the tube so that almost all areas of a cavity can be seen.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

H-12. Pilot for gas appliances "unaffected by lint"

New This new stainless steel "target pilot" is said to have undergone many rigid tests which have shown that the pilot will operate "unaffected in the very worst possible lint conditions." It is said to maintain blue flame characteristics long after other pilot burners tested. It also maintains a stable flame on appliance applications with draft conditions in excess of AGA limits.



H-13. New flexible grinding wheel

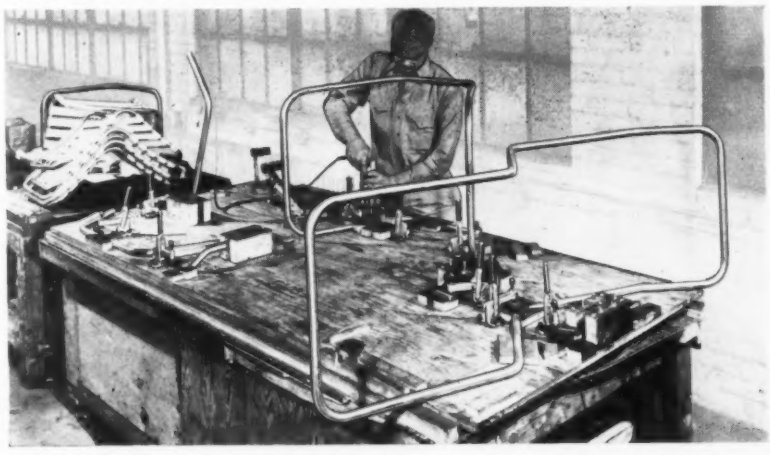
New A new principle for light grinding and metal finishing has been announced. Known as

Grind-O-Flex, the new tool is a flexible grinding wheel which consists of hundreds of individual abrasive cloth leaves sealed to a hard core. As the wheel rotates, it presents a continuous abrasive surface to metal parts. It is designed to smooth surfaces and remove flaws from contours without the danger of digging into the stock.

Grind-O-Flex is 6½" in diameter, 1" wide, and is available in a variety of grits from coarse to very fine. It may be used stationary or portably for all types of light grinding and deburring on irregular surfaces. No skill required to operate.

H-14. Special toggle clamps aid lawn furniture production

New Aluminum Utilities, Inc., Detroit, have found that the use of special toggle clamps are a big aid in the production of lawn furniture. The De-Sta-Co clamps give positive holding pressure during

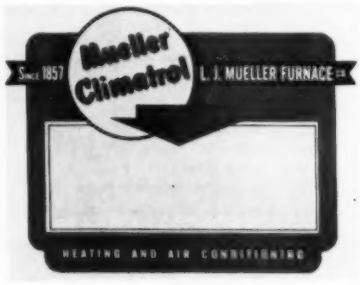


drilling operations, and permit fast removal and insertion of the aluminum tubular parts.

In the manufacturing operation, aluminum tubing material is cut to length, polished and put through a tube bending machine which forms the seat frames, bases and inner legs of the lawn furniture. A plywood base with wood guide blocks are used to protect the aluminum parts from scratches. The toggle clamps, with drill bushings attached to the adjusting bar, locate and hold the tubular parts during drilling operation. Final assembly is performed on an adjoining table.

H-15. Manufacturer nameplate decals refer customer to authorized service

New Too frequently the original dealers or servicing organization is unknown to the purchaser of appliances for the home. The problem has been solved by a leading producer of manufacturer-dealer de-



cals. An example of these handy indentification decal transfers is shown here, and was produced for the L. J. Mueller Furnace Co., manufacturers of heating and air conditioning equipment.

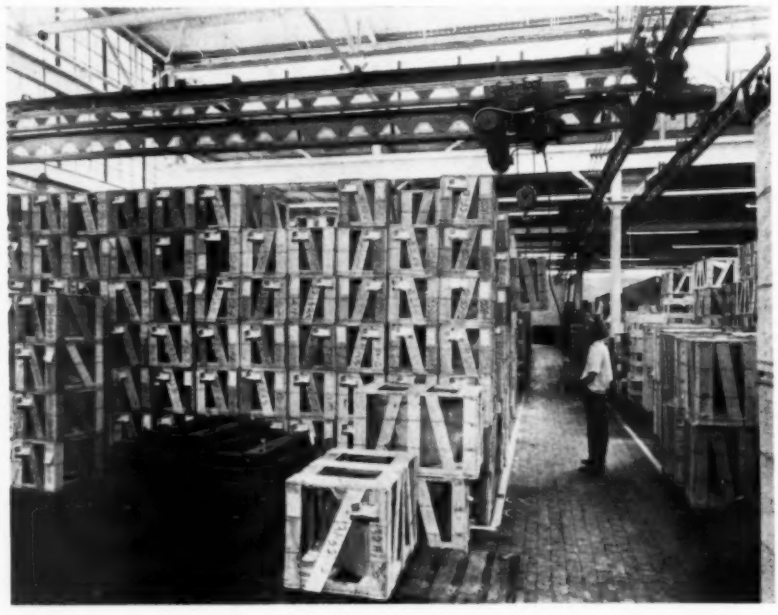
This is a special heat-resistant decal nameplate for installation on the furnace plenum.

H-16. Trambeam crane stacks high, saves aisle space

New Seven overhead Trambeam handling installations are helping Reliance Electric & Engineering Co. to achieve fast, versatile handling with maximum use of available space at their new plant in Euclid, Ohio. The jobs given the Trambeam cranes are many and varied. They serve receiving and shipping docks, motor storage, the engineering laboratory, paint spray booth and the coil winding department.

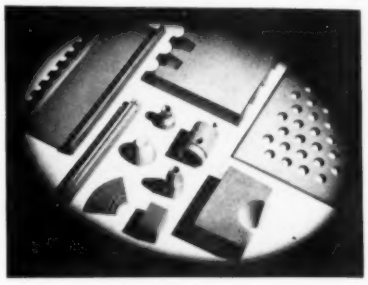
Trambeam handling has helped to reduce the amonut of floor handling required and thus there are no traffic-jammed aisled, thereby promoting good housekeeping. It has also helped Reliance put a wide variety of handling tasks in the one-man job classification.

Photo shows one of two similar Trambeam cranes serving adjacent storage areas. In this instance, crated motors are usually handled two at a time, moved up and overhead, and then out to the shipping area. This is a double-girder crane of three tons capacity; crane, hoist and carrier are motor-driven and controlled by pendant push-button.



H-17. High-temperature ceramic for use in welding, brazing, electronic heating, flame polishing

New This new ceramic, AlSiMag 539, is finding many industrial uses. It is an excellent material for fixtures, jigs and work holding



devices for fast production line handling of brazing, welding, electronic heating, flame polishing.

It is also valuable as a material for making pins, pads, plates, spacers and kiln furniture for high temperature sintering operations. Nozzles for welding tips and other extreme high temperature devices have given good performance. The manufacturer states that this ceramic has been heated white hot and quenched in dry ice without fracturing. *Test discs of this material are available without charge.*

H-18. New aerial grinder for heavy production work

New This new aerial grinder, available in three grinder sizes, is a new workhorse for industrial workbench or production in the welding shop, foundry, or sheet metal body shops.

Aluminum alloy housing cuts non-operative weight to a minimum. Ball bearings are used throughout. Commutator and switch are fully enclosed to keep out dust and shop grit. The aerial grinder weighs 12 pounds.

The 6 x 1″ wheel has a ⅝″ hole. spindle speed of 3730 rpm free; the 5 x 1″ wheel has ½″ hole, spindle speed of 4430 rpm; the 4 x 1″ wheel has ½″ hole, spindle speed of 5560 rpm.

H-19. Single-position infinite control for cooking appliances

New With the turn of the knob of this new single-position infinite control, it is possible to obtain any desired portion of connected

load from 1% to 100% of total connected wattage. It is not a rheostat, but rather a mechanical development through a series of cams, produced to logarithmic scale which controls the contact dwell per cycle timing. Generally a 1 rpm synchronic motor is used, but it is possible to vary cycle time from ½ to 5 rpm.

Primarily this device was designed to govern the heat output of top surface electric burners for ranges. However, it has many varied uses such as: electric hot plates, electric irons, domestic and commercial ovens, relays, periodic stopping and going of conveyors, therapeutic equipment, signaling equipment, stop lights, etc.

H-20. Hole punching unit eliminates conventional die sets

New A new line of Toolset hole piercing units and notching units are self-contained, and can be mounted on the lower bed of a press,

thus eliminating customary die sets. The press merely furnishes the force to drive the punch through the work piece.

A free floating punch and guide transmits the load of stripping directly on the work instead of the upper arm of the holder. The punch and die are permanently and automatically aligned in the holder. Stock sizes in holders available in widths up to 3½", with 4" to 16" throat depths.

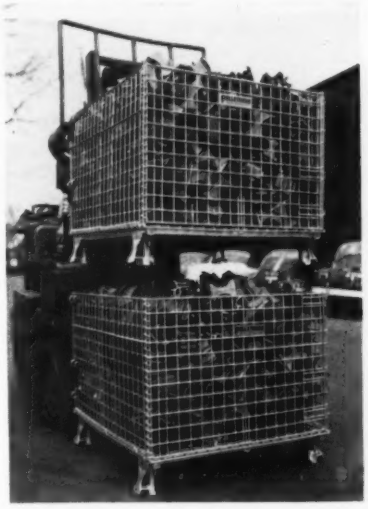
H-21. New metal finish permits bending, forming, fabricating

New A new "non-fading and corrosion resistant" organic finish is now being applied to steel, aluminum, brass, and zinc coils in width from ⅛ to 30", .010 to .036" gauge, in continuous lengths.

This baked enamel-type finish is said to stand up well under forming, drawing, bending, or fabricating of the metal. Tests have indicated that it will not crack, chip or chalk under abnormal use or severe weather conditions. Typical applications vary from metal awning covers, appliances, lighting fixtures and moulding to hardware items, toys, and bottle caps.

H-23. Palletainer provides maximum freedom of entry for truck forks

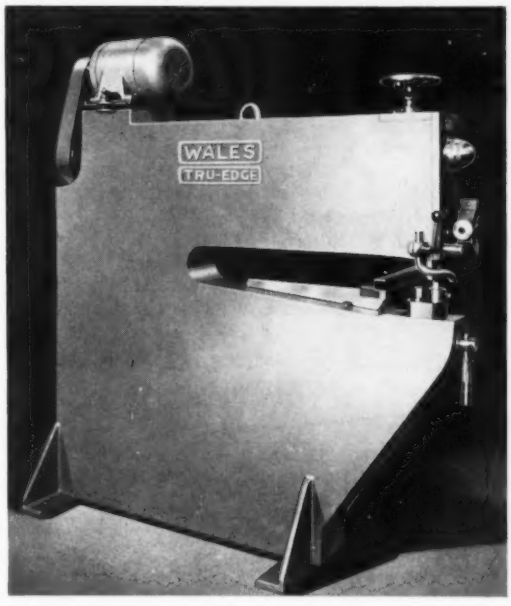
New This new "Hi-Lode" Palletainer provides maximum freedom of entry for truck forks, extra capacity for bulky materials.



Units stack safely, solidly, even when loads are heaped. Malleable steel corner legs and new frame design of interlocked U-channel beams assure rigidity and solidity in stacking. Available in 2,000, 4,000, and 6,000-pound capacity.

H-22. Large shear designed for contour and straight shearing

New This new large Tru-Edge shear is designed for contour and straight inside and outside shearing, beading, louvering and joggling. It has a capacity up to 9/32" thick mild steel. A new shearing principle eliminates resistance to feeding and turning the work. In addition, feeding of material may be started while ram is operating. Inside cutting requires no starting holes, entirely eliminating any preliminary operations.



Unique cam design provides vibrationless operation. Material is not punched, but is sheared to provide a smoothly cut edge.

An adjustable bottom shearing die is quickly set for various thicknesses of material. This is one of just two simple adjustments that provides fast, easy operation in varying gauges and types of sheet metal. The new Tru-

Edge shear cuts from 10 to 36 feet per minute, depending on gauge and material. Throat depth is 36½".

Industrial literature

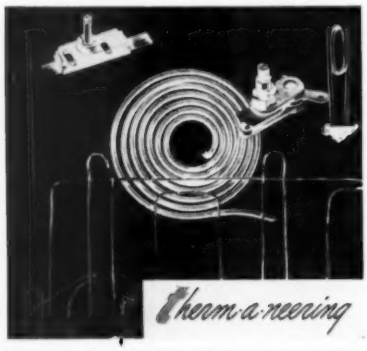
801. Brochure on preparation of aluminum for welding

New A new 12-page brochure describes a revolutionary process for preparing aluminum, magnesium, and hard-to-clean steels for welding and other finishing operations.

The process is said to clean without harming the metal, dissolve and remove the surface oxides, reduce the surface resistance to a value of 0 to 10 microhms, and preserve for long periods of time a surface resistance between 10 and 20 microhms. Included in brochure of notes is information on material equipment and results.

802. Data on "matched heat and its control" for appliances

New For appliances requiring electric heat and its control, Therm-a-neering can be an aid in the early planning and design. This booklet shows Therm-a-neering applications for electric water heaters, electric irons, deep fat fryers, refrigerators. A "Design Facts" file is also available.



803. Late developments in metals and metalworking industries

New This publication contains a feature article on "The Damascus Sword" and describes the history and metallurgy of this ancient weapon. Also included are "Granial and Its Use . . . ", "Stainless Steel Kettles," items on the latest developments in metals, and abstracts from technical papers on metalworking. *Available upon letterhead request.*

804. "Fork Truck of the Future"

New The X-70 — "The Fork Truck of the Future" — is featured in the new edition of "*Material Handling News*". The X-70 was built as an experimental model, and incorporates many suggestions made by long-time fork truck users and ultra-modern ideas fostered by industrial truck designers.

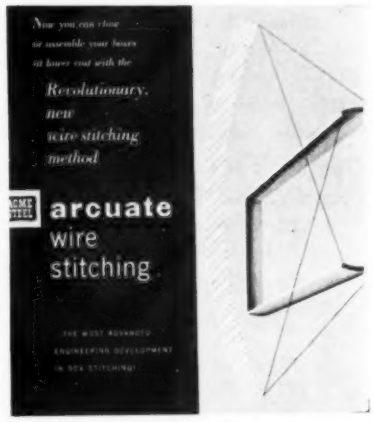
805. Chromoveil decorative finish for porcelain enamel

New A new technical bulletin presents information on Chromoveil, a new decorative finish for porcelain enamel. Its effect is a pattern of color in a network of lines over light or dark backgrounds. To achieve this tracery, Chromoveil (color in a special medium) is sprayed on through the veiling head attachments of regular spray gun equipment. The color is forced out in threads rather than in a mist.

Suggested uses for Chromoveil include oven liners, washer tubs, counter tops, architectural panels, wall tiles, sanitaryware, and large kitchen utensils.

806. Arcuate wire stitching method described in new bulletin

New This bulletin describes how a wire stitching machine puts an arc in a cross-section of flat wire, and then drives and clinches the stitch at high speed. It explains how arcuate (pronounced R-Q-IT) stitching cuts wire costs, make neater looking boxes, and reduces machine down time. Diagrams illustrate the basic principle of using an arc-shaped cross-section to strengthen wire. A table, showing standard wire sizes, is also included.



FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ **No.**_____ **No.**_____ **No.**_____

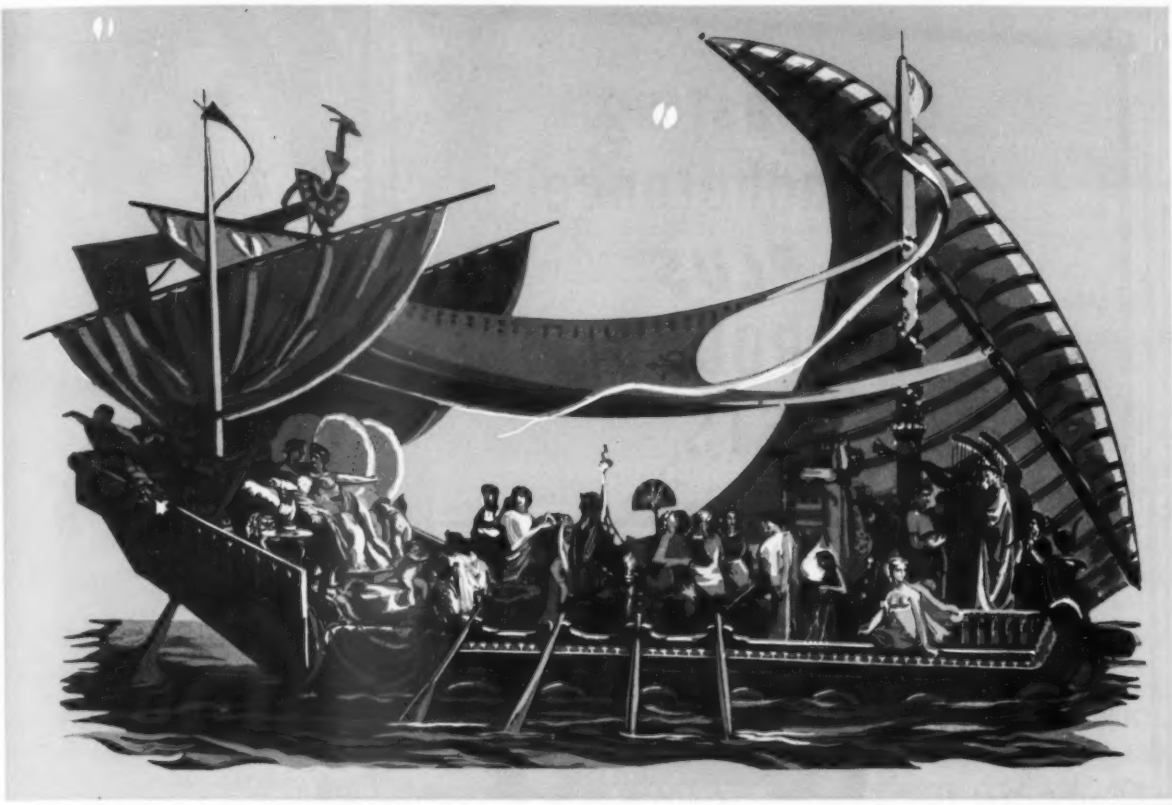
No._____ **No.**_____ **No.**_____ **No.**_____

Name _____ **Title** _____

Company _____

Company Address _____

City _____ **Zone**____ **State** _____



COLOR IS THE WORD FOR CLEO'!

Cleopatra's colorful barge had everything — luxury, lavishness, the gorgeousness of the Orient, the comforts of the west. And Pemco has everything to help you develop colors as eye-appealing as Cleopatra's entourage.

Pemco helps you control colors by working with you on the glazes

A good ceramic engineer understands the variations in color that come about through the influence of materials in a glaze. Your men could do the research necessary to produce a certain shade of color with your glaze. However, this is a service we offer you as our color customer. We can save you time, and perhaps do the research a little faster due to the size of our staff . . . or a little quicker because of our color analysis meters. This relieves your ceramic engineers to do other work.

We've already done more research on glazes than you are likely ever to find necessary. This is our business. We make all sorts of glaze frits from the high-lead bearing, high-firing variety to the completely fritted glaze. And we make custom frits to meet the confidential specifications of individual customers.

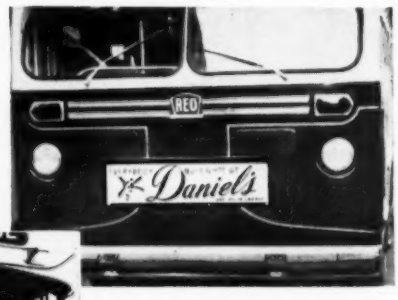
Because we know glaze frits so well, we understand colors just that much better. We don't stop at the composition of the color itself. We study its action and reaction in base glazes. Our present customers find this service of immeasurable value. A letter of inquiry is all you need to start the Pemco Research Laboratory working on your problems in glazes and colors.

WORLD'S FINEST PEMCO CORPORATION • 5601 Eastern Ave., Baltimore 24, Md.

"The World's Finest" PORCELAIN ENAMEL FRITS • GLAZE FRITS • PORCELAIN ENAMEL COLORS • GLAZE STAINS • GLASS COLORS • CERAMIC MATERIALS

Gets lasting paint adherence ...PLUS LOWER PRODUCTION COSTS

The Yarder Manufacturing Company, Toledo, Ohio, uses Electro Paintlok for a lasting enamel finish on their "Road King" signs and frames for traveling posters on buses, street cars, trucks and taxi cabs.



● Republic Electro Paintlok affords this manufacturer of outdoor signs and advertising frames production economies while adding years to the life of his product.

When Electro Paintlok was adopted in place of plain steel, an 8% reduction in costs resulted. Less current was needed to spot weld Electro Paintlok. The use of special welding points was eliminated. Point cleaning was reduced. Electro Paintlok was spot welded at a faster rate. Prior to applying baked-on enamel, Electro Paintlok required only one simple cleaning to remove dirt acquired during storage and fabrication.

Electro Paintlok is the zinc-plated steel sheet that is chemically treated to take paints, lacquers and synthetic enamels . . . and to hold them for years.

What's more, the tight zinc coating helps protect the steel and the enameled finish from creeping rust and corrosion should the surface become scratched.

Get the complete story on how Electro Paintlok can add eye appeal to your fabricated steel products. Ask for Booklet 525.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES: CLEVELAND 1, OHIO
Export Department:
Chrysler Building, New York 17, N. Y.

REPUBLIC STEEL

Republic
ELECTRO ZINC PLATED SHEETS
Electro Paintlok · Electro Zincbond
REG. U.S. PAT. OFF.

Other Republic Products include Carbon, Alloy and Stainless Steels — Sheets, Strip, Plates, Bars, Pipe, Tubing, Wire, Bolts and Nuts

FOX TO HEAD PRODUCTION AT WESTINGHOUSE COLUMBUS

Frank C. Fox has been named manager of production at Westinghouse Electric Corp.'s new appliance division plant in Columbus, Ohio, according to a joint announcement by C. L. VanDerau, division general works manager, and E. L. Smith, works manager at Columbus.

In addition to his new responsibilities, Fox will continue to handle contractual negotiations incidental to the de-activation of the Columbus jet engine program. He has been with Westinghouse since 1933.

SAMUEL STAMPING NAMES SOLOMON DIR. OF RESEARCH

R. E. Solomon has been appointed director of research, Samuel Stamping & Enameling Co., Chattanooga. He was formerly associated with the firm as chief engineer from 1948 to 1952. During his absence, he was connected with a Pittsburgh firm.

WORTHINGTON BUILDING NEW AIR CONDITIONING PLANT

Worthington Corporation has begun construction of a new plant in Decatur, Alabama, for the manufacture of self-contained air conditioning equipment, it was announced by Hobart C. Ramsey, president.

The initial plant and equipment will represent an investment of approximately $3.5 million dollars. Worthington contemplates occupancy of the 240 x 600 ft. plant by November. The plant will be the largest manufacturing installation in the South devoted exclusively to the production of air conditioning equipment according to the report.

FLORENCE STOVE NAMES TWO WORKS MANAGERS

Robert W. Duncan has been appointed works manager of Florence

ROBERT DUNCAN

Stove Co.'s plant in Kankakee, Ill., it was announced by Robert H. Taylor, president. The appointment followed the resignation of W. T. MacKay, who is planning to enter private business. Duncan formerly was works manager of the Richmond, Ind., plant of Crosley Division of Avco Mfg. Corp.

Taylor also announced the appointment of Allen C. Shippee as works manager of Florence Stove's plant in Gardner, Mass. Shippee will report to G. B. Colburn, vice president and general manager of the firm's factories in Gardner and Lewisburg, Tenn. He formerly was assistant to the controller.

A. O. SMITH NAMES BRINKER DIRECTOR OF MARKETING

A. O. Smith Corp. has announced the appointment of J. H. Brinker, assistant executive in charge of distribution, as director of marketing. His activities will include direct supervision of advertising and sales promotion, of exhibits and displays of products, and the market analysis department. He has been with the firm since 1947.

LAWNDALE SINKS REVISES MARKETING STRUCTURE

Lawndale Enameling Co., Chicago, manufacturer of kitchen sinks, is revising its marketing sturcture and will appoint additional sales representatives, it was disclosed by Arthur M. Lander, president.

Lander said that the decision to expand its sales organization came about primarily because the growth of sales during the past several years has reduced the ability of its present distributor organization to adequately service all accounts.

RCA ESTATE NAMES YOST, BROSENE TO ENGR. POSTS

Appointment of two engineering executives at RCA Estate Appliance Corp., Hamilton, Ohio, was announced by Ellsworth Simms, vice president of manufacturing.

Kenneth Yost was named to the newly-created position of manager of manufacturing engineering, with responsibility for tool and equipment engineering, methods and standards, and materials handling.

Taking over most of the responsibility formerly held by Simms, before his advancement to vice president, is William G. Brosene, who was named chief product engineer.

Industrial Designers Institute award — *is presented to Donald Dailey (center), vice president of product planning, Servel, Inc., by Paul R. MacAlister, chairman of IDI award committee. Neal Schuman, sales manager of Servel's Wonderbar Division, watches presentation of award and medal which Dailey received for his design of the electric Wonderbar.*

RICHMOND METAL BEGINS PRODUCTION IN NEW PLANT

Richmond Metal Mfg. Corp., Philadelphia, manufacturers of kitchen sinks and cabinets, has begun production in their new plant which replaces their old plant destroyed by fire in November. Henry Berman, president, stated that Richmond Metal is equipped with the most modern production machinery available.

PEI ANNOUNCES PLANS FOR ANNUAL SHOP PRACTICE FORUM

Plans for the 15th annual Shop Practice Forum of the Porcelain Enamel Institute, to be held at Ohio State University, September 16-18, have been announced by John C. Oliver, PEI secretary.

The opening session on Wednesday will include factual presentations on the theme of "What's New in the Industry," and will include the following subjects: "Enamel Slip Pumping", "Hot Process Screening", "Chalkboard Enamels", "Electrostatic Spraying" and "Roller Quenched Frit."

Thursday morning's session will feature a series of practical and usable tests of benefit to the enameling industry, plus a symposium on ball mill grinding with emphasis on the results of high density grinding media.

The afternoon session on Thursday will give consideration to architectural porcelain, and various factors concerning its processing through the plant. Another topic at the session will be the disposal of wastes by enamel plants.

The Forum's banquet will be held Thursday evening.

Friday morning's session will feature a symposium on recommended processing methods, a presentation of a number of unusual techniques and processes devised in the industry, plus a discussion on the subject of flow-coat application of porcelain enamel.

HERBERT TURK HEADS SALES EXECUTIVES COUNCIL

At a recent meeting of the Sales Executives Council, Herbert Turk, executive vice president of Pemco Corporation, Baltimore, was elected president for 1953-54. Turk, who served as vice president last year and as a director since 1950, succeeded Russell C. Wonderlic.

An active member since the Council's formation, Turk, in 1949, headed the Speakers Bureau, and in 1951 the Atlantic City Committee. Last year, in addition to his duties as vice president, he was chairman of the program committee.

NATL. PRESTO SHELL CONTRACT

National Presto Industries, Inc., Eau Claire, Wis., is reported to have received a $17 million contract to establish and operate an artillery shell plant. The contract for 105 mm shells was awarded the Chicago Ordnance District.

L. E. Phillips, National Presto president, said the new plant will create 1500 to 2000 new jobs.

TO PRESENT MATTIELLO LECTURE AT PAINT, VARNISH MEETING

Dr. Adolf C. Elm, of The New Jersey Zinc Co., has been selected to present the fifth Joseph J. Mattiello Lecture at the annual meeting of the Federation of Paint and Varnish Production Clubs, to be held in Atlantic City, October 29-31.

Dr. Elm is an authority in the field of drying oils, pigments and paints, and an eminent student of the physical and chemical properties of paint films, and their behavior under exposure to various conditions.

the SPRA-C compar

Finishing equipment at Troy Sunshade, Troy, Ohio, is by Spra-Con.

Spra-Con finishing equipment helps top manufacturers of furniture, appliances and other metal products produce SMOOTHER, more salable finishes by providing equipment that employs **modern** application methods.

The SPRA-CON AUTOMATIC PAINT APPLICATOR for prime coats provides the perfect base for the latest developments in finish coats.

Other Spra-Con equipment such as paint bake ovens, dry-off ovens, conveyors, phosphatizing equipment, and "on-the-roof" baking ovens, will round out a finishing department capable of maximum production with greatest economy.

Let a Spra-Con engineer check your plant for possible increased production at lower cost.

The Spra-Con Company

3600 Elston Ave. Chicago 18, Ill.

PEMCO MAN HEADS BALTIMORE QUALITY CONTROL GROUP

George Updike, Pemco Corporation, has been elected chairman of the

Baltimore Section of the American Society for Quality Control for the 1953-54 term. Updike is in charge of quality control functions at Pemco, manufacturer of porcelain enamel and glaze frits, and oxides for colors for the ceramic industry.

PRESSED METAL INSTITUTE TO ESTABLISH TECHNICAL, ENGINEERING DEPARTMENT

Immediate establishment of a technical and engineering department for the Pressed Metal Institute has been approved by the PMI board of didectors. The department will be headed by a full-time technical director attached to PMI headquarters staff in Cleveland, Ohio.

The department will study those technical trends having a far-reaching effect on the stamping industry; will provide liaison with other technical committees and the Government; advise of technical advances in other metal working industries; publish a monthly technical bulletin; compile a handbook for the industry; and extend cooperation to engineering colleges.

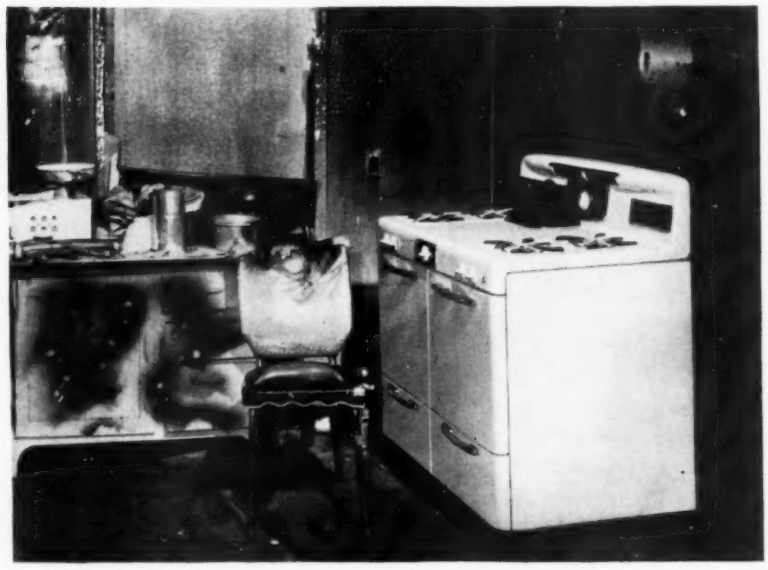
It is anticipated that original research will eventually become a part of this program. Among items being considered, both from the standpoint of collating present known information and experimenting with information not now available, are the problems of metal flow, wrinkling, spring back, and die design in relation to metal flow.

FERRO APPOINTS MARKS ADMINISTRATIVE VICE PRES.

Appointment of Harry T. Marks to the position of administrative vice

president of Ferro Corporation, Cleveland, has been announced by C. D. Clawson, president. He had been vice president in charge of foreign operations, and manager of the Ferro's International Division. Marks has been with Ferro over 20 years.

Universal gas range — *withstands severe fire in the Robert Roberts home in Chicago. Mrs. Roberts said the range was blackened, but upon applying soap and elbow grease, it emerged as good as new.*



3M ACQUIRES AMERICAN LAVA

Acquisition of American Lava Corp., Chattanooga, by Minnesota Mining & Mfg. Co. through a $5 million stock transfer has been announced. Herbert P. Buetow, 3M president, and John Kruesi, American Lava president, said officers of the two firms have approved a deal by which the Tennessee firm would become a wholly-owned 3M subsidiary.

HLAVIN HEADS GAS VALVE SALES FOR DETROIT BRASS

Robert T. Hlavin has been appointed sales manager, gas valve di-

vision, Detroit Brass & Malleable Co., Detroit, according to William J. Wildern, vice president in charge of the Detroit plant.

Formerly department head of the testing laboratory of the American Gas Association, Hlavin joined the Detroit Brass organization seven years ago, and has devoted his time largely to contacting and consulting with customers, engineers and purchasing agents with reference to the application, design and development of components for use on appliances and related products.

GLIDDEN TO EXPAND NUBIAN DIVISION FACILITIES

A $750,000 expansion program to increase manufacturing and warehousing space at The Glidden Company's Nubian Industrial Division, in Chicago, was announced by A. D. Duncan, Glidden vice president and paint division general manager.

The facilities will mark the fourth major increase to Nubian plants and laboratories since 1946. When completed about the end of this year, it will add more than 100,000 sq. ft. to present facilities. Previous post war expansion has exceeded $1,000,000 Duncan explained.

TUTTLE & KIFT EXEC. V. P.

Appointment of Ross P. Blodgett as executive vice president of Tuttle & Kift, Inc., Chicago, a wholly-owned subsidiary of Ferro Corporation, was announced by W. R. Tuttle, T&K president.

Blodgett has been associated with T&K since 1940 when he joined the firm as assistant chief engineer. More recently he served as vice president.

T&K is primarily engaged in the manufacture of electrical heating equipment, with special emphasis on the production of surface heating units of encased or rod-style type for the electric range industry.

CALKINS NAMED SALES MGR. OF SORENG PRODUCTS

P. H. Korrell, vice president and director of sales, Soreng Products

Corp., Schiller Park, Ill., has announced the appointment of Gilbert

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Raftaekjaverksmidjan Ltd. reporting — *from Hafnarfjardur, Iceland. Photo shows an Icelander hammering washing kettles from stainless steel.*

PHOTO COURTESY ARMCO STEEL CORP.

"Gib" Calkins to the newly-created post of sales manager.

Calkins has broad experience in the electrical component industry, and since 1947 was associated with Redmond Company, Inc., Owosso, Mich., in various sales capacities.

FAINT NAMED CHICAGO SALES MGR. FOR FREDERIC STEVENS

Harold W. Faint has been appointed Chicago district sales manager, metal finishing division, Frederic B. Stevens, Inc., according to Frank Watt, division sales manager. Previously, Faint was sales manager of Industrial Filter & Pump Mfg. Co.

DOBSON HEADS VACUUM CLEANER MFRS. CONFERENCE COMMITTEE

Robert E. Dobson, manager, vacuum cleaner department, Westinghouse Electric Corp., Mansfield, Ohio, has been appointed chairman of the National Home Vacuum Cleaning Conference Committee of the Vacuum Cleaner Manufacturers Association.

ROBERT E. DOBSON

The industry's third conference—for editors, educators, extension workers and other home economists — will be held November 4, at Hotel Commodore, New York City.

REPUBLIC STEEL NAMES FOY V.P., HAMAKER GEN. SALES MGR.

The election of Norman W. Foy as vice president — sales of Republic Steel Corp. was announced by C. M. White, president. Foy succeeds J. M. Schlendorf who retired July 1, but is continuing with Republic in a consulting capacity on sales.

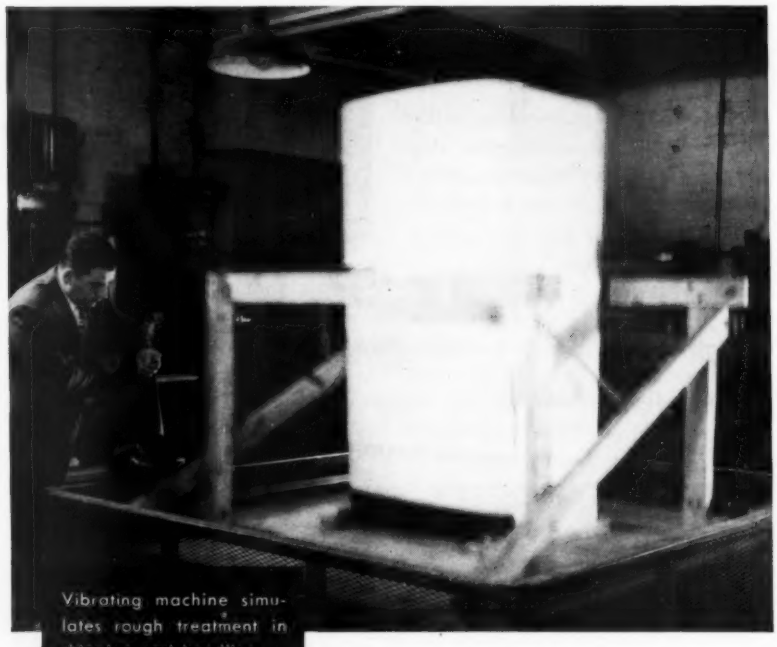
Foy then announced the advancement of L. S. Hamaker to general manager of sales, the position formerly held by Foy. Foy also announced the appointments of S. A. Crabtree and R. W. Helms as assistant general managers of sales.

ELECTROPLATERS ASSOCIATION ANNOUNCES NEW OFFICERS

The American Electroplaters Society has announced election of the following new officers:

President, Dr. George P. Swift, Electrochemical & Spectrochemical Laboratories, Watertown, Mass.; 1st vice pres., Dr. R. A. Schaefer, Cleveland Graphite Bronze Co.; 2nd vice pres., Clyde Kelly, Superior Plating Works, Chicago; 3rd vice pres., Dr. Samuel Heiman, Philadelphia Rustproof Co.

OUR PLANTS are part of your production line...



Vibrating machine simulates rough treatment in shipping and handling . . . demonstrates non-settling properties of Fiberglas insulations.

FIBERGLAS* TESTS like this can help you double-check how insulation performs in your appliances.

..and this quality feature is part of your selling line!

FIBERGLAS INSULATION MADE BY OWENS-CORNING FIBERGLAS insulated OWENS-CORNING FIBERGLAS CORPORATION · TOLEDO 1, OHIO

TUNE IN "ARTHUR GODFREY TIME", sponsored by Owens-Corning Fiberglas Corporation, broadcast over a nationwide CBS television and radio network.

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

VOSS CHANGES FIRM'S NAME

Voss Bros. Mfg. Co., Davenport, Iowa, has changed its name to Kartridg—Pak Machine Co., and is now making food machinery and doing contract machining. Their washing machine business was recently sold to Midwest Metal Stamping Co., Kellogg, Iowa.

Summer market

→ *from Page 53*

growth of vital proportions in the major appliance field.

"Sales of 400,000 units in 1953, and the almost certain likelihood of 750,000 units in 1954, has made a strong impression on wholesalers and dealers alike," he pointed out.

Sales of room air conditioners in 1953 will probably be limited only by production. The shortage this year is due to the serious bottleneck of one or two of the component parts, Tracey said, adding that "there is strong indication that in 1954 these production bottlenecks will be broken so that production will be limited only by sales. On that basis, a volume of 1,500,000 room air conditioners in the year of 1955 seems a reasonable expectation."

THE MARKET IN BRIEF

Buying in the appliance field at the market was brisk for certain manufacturers and slow for others. The ones reporting slow buying felt that it was because of higher inventories at the retail level, but they indicated that the inventory level was not dangerous.

A swing in consumer habits away from the high priced deluxe units was also noted by a number of manufacturers.

The summer market saw major appliance lines brightened and bolstered with new products made to solidify line strength rather than to replace existing models. Seen most often were two-door refrigerator-freezer combinations, generous capacity refrigerators, and double-oven deluxe ranges in standard or 30-inch width. Color brightened products again attracted strong interest.

Sicon in colors withstands 500°F.

SICON, THE ORIGINAL SILICONE HEAT-RESISTANT FINISH, IN GLEAMING WHITE AND TAN PROTECTS SURFACE OF HOME INCINERATOR

Here's what the makers of Calcinator say about SICON

"In keeping with the high standards we wished to attain for Calcinator, we chose 'Sicon.

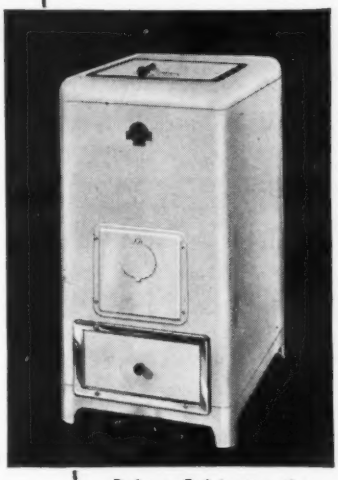
Under rigid perfection tests 'Sicon' was found to have:

1. High resistance to heat when exposed to temperatures ranging from 400 to 500°F.

2. Exceptional color as well as gloss retention qualities.

In addition, only 'Sicon' had good inherent qualities of adhesion and film stability."

W.M. Milbourne, Sales Mgr., Calcinator Division Valley Welding & Boiler Co., Bay City, Michigan



Deluxe Calcinator, the home incinerator so smart looking that it can be placed right in the kitchen. Finished in SICON White.

Standard Calcinator, for utility room or basement location, features latest advances in incinerators. Finished in SICON Tan.

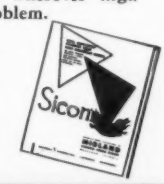
SICON STANDS UP WHERE OTHER HEAT-RESISTANT FINISHES FAIL!

In case after case, for product after product, SICON has proved to be the *only* heat-resistant finish to pass all tests—in the laboratory and on the production line.

Sicon, in smart decorative colors, now opens up a new horizon for design engineers, because only Sicon makes it possible to combine "eye appeal" with retention of color and gloss in the presence of sustained heat.

No matter how rigid your heat-resistant finish requirement, *try* Sicon, the original silicone-base finish that has revolutionized product finishing wherever high temperatures pose a problem.

Write for brochure and complete engineering details.



Sicon

Silicone-Base Heat-Resistant Finish

manufactured exclusively by MIDLAND INDUSTRIAL FINISHES CO. Waukegan, Illinois

VARNISHES • ENAMELS • LACQUERS • SYNTHETICS

JOHN R. HURLEY DIES

John R. Hurley, 45, president of Thor Corporation and vice president of its Meadows Corporation division, died June 21. He was a son of the late Edward N. Hurley, founder of the Thor firm. His brother Raymond J. Hurley is board chairman.

BLISS, GENERAL MOTORS MEN HEAD NEW ASTE CHAPTERS

Carl H. Smith, superintendent of The E. W. Bliss Company, has been elected chairman of the new Canton, Ohio, Chapter of the American Society of Tool Engineers. Chairman of the new Lansing, Michigan, Chapter of ASTE is R. F. Gietzel, senior production engineer, Oldsmobile Division of General Motors Corp.

KOLD-HOLD CHANGES NAME TO TRANTER MANUFACTURING

Kold-Hold Mfg. Co., Lansing, Mich., manufacturers of refrigeration equipment and products in the industries and domestic heating fields, has announced a change in its corporate name to Tranter Manufacturing, Inc. James R. Tranter, president and general manager, said the original Kold-Hold product now represents less than a tenth of the firm's total business.

SERVEL PURCHASING APPTS.

S. L. Nicholson, vice president in charge of purchasing, Servel, Inc.,

F. G. KRACH

Evansville, Ind., has announced the following purchasing department appointments: Fred G. Krach, purchasing agent in charge of raw materials; Erwin F. Schmidt, buyer of forgings and castings; William Gallmeister, buyer of non-ferrous metals; and Jerry Tromly, buyer of ferrous metals.

PORCELAIN ENAMEL INSTITUTE PREPARING TO ESTABLISH ALKALI RESISTANCE TEST

Dr. G. H. Spencer-Strong, chairman of the Porcelain Enamel Institute's Quality Development Committee, and vice president and director of research of Pemco Corporation, has announced that a new subcommittee has been appointed to prepare a standard test method for determining the alkali resistance of porcelain enamels.

In the past, it has been considered that all porcelain enamels have had very good resistance to alkali attack under normal conditions of use. But with the use of alkaline detergents of widely varying composition, in recent years, it has become essential that the enameling industry give greater attention to the formulation of porcelain enamels having known alkali resistant qualities, he said.

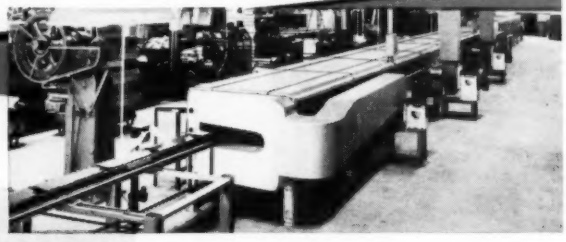
The special sub-committee will correlate, evaluate, and utilize the data

"Production Stepped-Up 500%" with JENSEN PAN-L-HEAT

Kenneth M. Parsons, Works Manager at Air Control Products, Inc., says:

"One mile of product was previously tops for eight hours' production. Now, with a Jensen Pan-L-Heat oven and conveyor, we're doing *five miles* with ease. We're pleased, too, with the *quality* of finish. Also—costs have been cut way down. Only two operators—one at each end (*150 feet apart*) —are required for the entire operation."

There's a Jensen sales engineer near you who would like to talk about INCREASED PRODUCTION and COST CUTTING for YOU. Why not call him in right now.



YOUR PLANT CAN HAVE

- Increased pay load realization.
- More effective use of electric heat.
- Uniform, high quality production.
- Superior results with shorter heating cycles—at lower energy consumption.

This 63-ft., 240-KW Pan-L-Heat oven and Jensen conveyor are doing a better job—quicker—for Air Control Products, Inc., Coopersville, Michigan. The product (steel awning sections) is painted on both sides before reaching conveyor.

Jensen SPECIALTIES, INC.

PAN-L-HEAT Ovens

REPRESENTATIVES IN PRINCIPAL CITIES

9331 Freeland Ave.
Detroit 28, Mich.

developed by industry, and if necessary, recommend further supplemental research be carried out through the facilities of the Institute, so that a standard industry-wide test for alkali resistance can be established.

Members of the new sub-committee include: John T. Roberts (chairman), Crane; H. W. Alexander, Frigidaire; F. L. Michels, General Electric; E. E. Bryant, Ferro; Hollis R. Saunders, Hommel; Charles Fuchs, Westinghouse; E. G. Porst, Pemco; and H. B. Kirkpatrick, National Bureau of Standards.

FERRO TO MAKE DUPONT'S FRIT FOR ALUMINUM ENAMELS

Ferro Corporation, Cleveland, will manufacture and sell a new enamel frit especially developed by DuPont for the coating of aluminum, according to C. D. Clawson, Ferro president.

DuPont researchers have developed a method of meeting the lower melting requirements of aluminum enamel coating—about 1000° F. as compared to standard frits, used on steel, which are processed at about 1500° F.

Clawson expressed the belief that many new architectural and industrial uses for porcelain enameled aluminum will open up as the metal acquires wider availability. "New needs for ceramic coatings for colors, corrosion resistance, abrasion, thermal shock, impact and flexing, as well as ease of fabrication, have already been widely expressed by builders and industrialists," he stated.

MULLINS NAMES BROWN KOLDFLO DEVELOPMENT MGR.

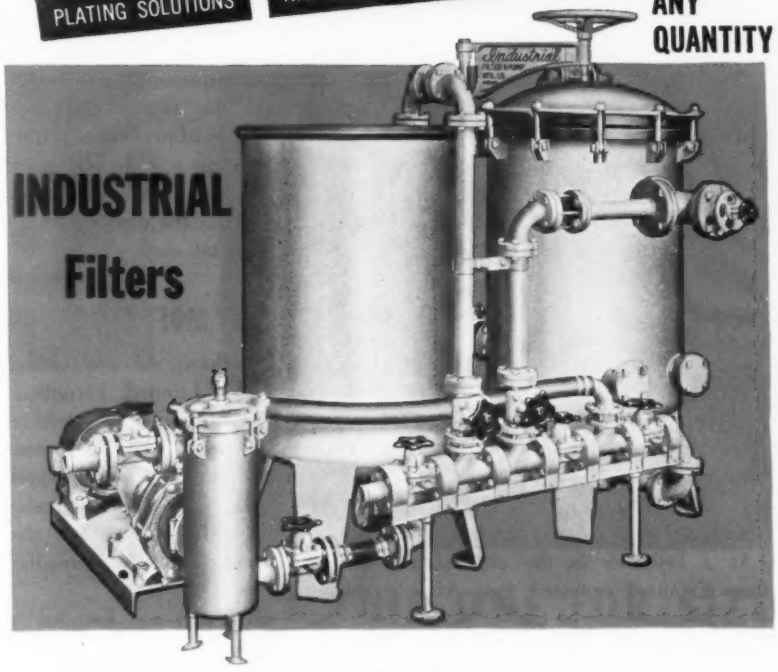
George E. Whitlock, president of Mullins Mfg. Corp., has announced the appointment of Darwyn I. Brown as market development manager of the Koldflo Division. Brown recently resigned as an editor of Iron Age.

Mullins is currently building a $2,600,000 facility at its plant in Warren, Ohio, to produce commercial items by its Koldflo process *(see "Mullins 'Research Baby' Goes Commercial", March, 1953,* finish).

CLARIFICATION of

PLATING SOLUTIONS · NICKEL DIP SOLUTIONS · NEUTRALIZER SOLUTIONS

ANY QUANTITY



BONUS PERFORMANCE
with lasting reliability

The engineering and construction features of INDUSTRIAL filters add up to maximum clear filtrate with less floor space, greater operating conveniences, and less maintenance delays and expense. The general design permits the use of the materials best suited to the solution requirements. Vertical filter leaves with ample flow space on both sides offer maximum filtration area. Outside lockup simplifies the installation of filter leaf and bag assemblies. An exclusive air-wash cleaning method practically eliminates the usual labor and inconvenience of dismantling the filter after every cycle. INDUSTRIAL filters are often in operation for months without removing the cover — cutting downtime to a minimum. All these features have been proved in long-life service — your assurance of dependable bonus performance.

Full particulars and recommendations on any filtration job will be given upon request.

4583

INDUSTRIAL
FILTER & PUMP MFG. CO.
5906 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
CORROSION TEST CABINETS
HEAT EXCHANGERS

Fabricating the STEEL television "tube"

→ *from Page 31*

There are many advantages of metal tubes over all-glass tubes. The structural strength of a metal tube permits the use of a thinner face plate glass which provides superior optical quality with very little distortion due to curvature.

Metal tubes further allow flexibility from the design standpoint. Modifications in design are comparatively easy to incorporate in these tubes. Finally, the considerably reduced weight of the metal tube allows for lower costs in mounting the tubes in the sets and in shipping the completed television receiver.

As each new alloy is developed and as the picture size becomes larger and larger, our engineers feel that the automatic spinning method will still remain the fastest and most economical form of production, either in manufacturing a complete round metal cone or in performing the initial operation for the drawing of the rectangular metal shell.

AVCO EXPANDS CANADIAN INTERESTS, TO BUY MOFFATS STOCK

Plans for a major expansion and integration of the Canadian interests of Avco Mfg. Corp. were disclosed with the announcement by Victor Emanuel, Avco chairman and president, of the formation of a new subsidiary, Avco of Canada, Ltd.

As a keystone in the expansion plan, Emanuel reported that Avco of Canada has entered into an agreement to purchase all outstanding stock of Moffats Limited, Toronto, a leading Canadian appliance manufacturer. The assets of Avco's present subsidiaries, Bendix Home Appliances Canada, Ltd. and Crosley Radio and Television, Ltd. will also be acquired by the new Canadian subsidiary.

The Moffats firm was founded in 1882, and has manufacturing plants in Toronto and Orillia, Ontario. In addition to its household appliance line, which includes electric and gas ranges, refrigerators, home freezers, room air conditioners, clothes dryers and automatic electric water heaters, Moffats is also a leading manufacturer in Canada of commercial electric cooking equipment.

Since 1947, Moffats has manufactured and distributed, under license, Crosley Shelvador refrigerators and other Crosley appliances in the Canadian market. Crosley Radio and Television, Ltd. manufactures radio and television receivers in a newly-constructed plant in Toronto.

RUMBAUGH HEADS SALES ENGRG. FOR KLEM CHEMICALS

T. Curtis McKenzie, president of Klem Chemicals, Inc., Dearborn, Mich., has announced the appointment of Roy Rumbaugh as director of sales engineering. Previously, Rumbaugh represented Klem as a manufacturer's agent for eight years.

A Motor for your Combination

ROTISSERIE and BROILER

• If you manufacture a Rotisserie, Broiler or a Household Range, a motorized Spit provides the new and modern way to cook — here is the motor for you.

Hundreds of thousands are in use today on this type cooking appliance and other products such as vending, coin operated, amusement and advertising displays where motion at slow speeds is desired.

Made in three basic sizes and with output shaft speeds of from 1 to 500 rpm and with torque of from 5 to 500 in. ounces. Write for descriptive information and data sheet.

Motoresearch Company

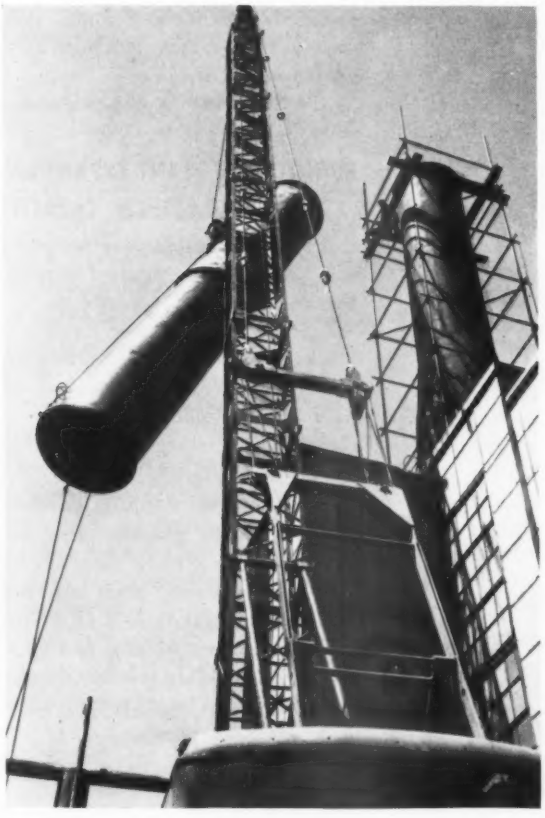
1600 JUNCTION AVENUE
RACINE, WISCONSIN

Designers and Manufacturers of
SPECIAL INDUCTION MOTORS

MONTHLY WAREHOUSE STOCK LIST
Detroit Warehouse Stocks
MEMO: IF YOU USE OR NEED ROLLED HEAT RESISTING ALLOYS FOR USE IN TEMPERATURES FROM 1500 TO 2200°F. YOU SHOULD HAVE THIS MONTHLY STOCK LIST. SEND FOR IT NOW
Sheets Plates Rounds
Squares Hexagons Flats
Nuts Pipe Welding Rod
ROLLED ALLOYS, INC.
Heat and Corrosion Resistant Alloy Specialists
4815 BELLEVUE AVENUE, DETROIT 7, MICHIGAN • TEL. WALNUT 1-4462

Australian visitors — *at the finish offices, A. T. Hallewell (left), chief draughtsman, and S. H. Dunstone, works manager, of A. Simpson & Son, Limited, of Adelaide, South Australia.*

Glass-lined smoke stack — *produced by A. O. Smith Corp., is shown being hoisted aloft to form the top section of an 85-foot power house stack at the firm's Milwaukee plant. The glass-lined stack will constitute a "guinea pig" to be kept under observation for the next several years. It is 44 feet long and 6 feet in diameter.*



TRY THIS ONE FOR SIZE!

A Typical U. S. Electrical Tool Value

If you use ¼-inch drills *compare this U. S. Product, feature by feature,* and then *compare the price.*

● 100% Full Ball-Bearing Construction ● Rugged Aluminum Alloy Frame ● Alloy Steel Gears ● Jacobs 3-jaw Geared Chuck ● Price..$28.00*

Here is the ideal drill for continuous duty on even the most difficult jobs in automotive, maintenance and assembly work. Extremely powerful, it will not stall in heavy-duty drilling in metal or wood. Cool operating under constant use.

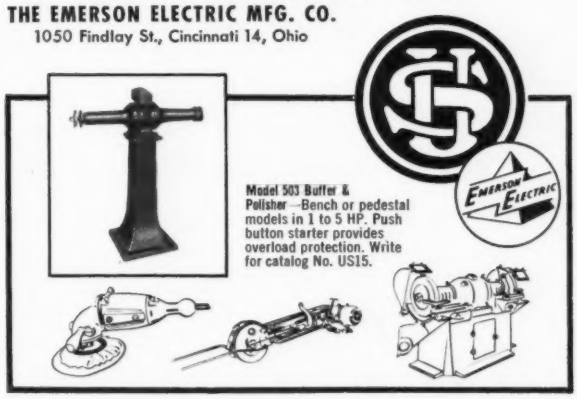
If you are not acquainted with a nearby U. S. Electrical Tool Distributor, or the complete line of U. S. drills, sanders, polishers, grinders and buffers, write us at once for Distributor's name and free catalog No. US15.

**Prices subject to change without notice.*

United States Electrical Tool Division

THE EMERSON ELECTRIC MFG. CO.

1050 Findlay St., Cincinnati 14, Ohio


Model 503 Buffer & Polisher—Bench or pedestal models in 1 to 5 HP. Push button starter provides overload protection. Write for catalog No. US15.
EMERSON ELECTRIC

HENRY ALTORFER NAMED PRES., GEN. MGR. OF ALTORFER BROS.

Henry W. Altorfer is the new president and general manager of Altorfer Bros. Co., Peoria, manufacturers of home laundry equipment. He is the third brother to head the firm, and succeeds his brother, A. W. Altorfer, who is retiring.

A. W. Altorfer designed the first ABC washer in 1909, when he, along with his father, Henry, and brother, the late S. H. Altorfer, formed the company. He had been president since 1934.

Eugene R. Johnson continues as vice president and general counsel, and S. J. Callahan remains as secretary.

"BRYANT INDUSTRIAL PRODUCTS"

Formation of Bryant Industrial Products Corp. and its purchase of the principal assets and production facilities of the Bryant Industrial Division, Affiliated Gas Equipment, Inc., was announced by Robert M. Buck, president of the new Cleveland enterprise. The firm will specialize in the design, production and marketing of industrial gas combustion equipment.

LA CROSSE UPRIGHT FREEZERS

Two upright freezers, the first to be produced by the company, have been announced by La Crosse Cooler Co., La Crosse, Wis. Called the Polar Pantry, the units have 19 and 27 cu. ft. capacities. Features include all-steel construction, built-in door lock, automatic alarm system, illuminated compartments, and a condensation minimizer.

PHILCO APPOINTS QUINN MGR. OF REFRIGERATION ENGINEERING

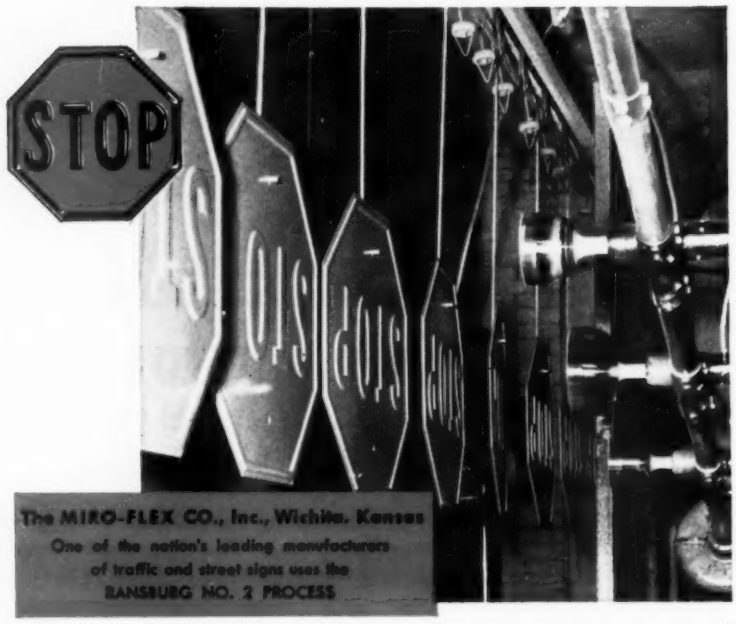
Philco Corporation has announced the appointment of Charles R. Quinn as manager of engineering for refrigerators and home freezers. He joined Philco in 1938 as chief draftsman for refrigerators, freezers and room air conditioning units. Previously, he was associated with Stewart-Warner Corp., and Fairbanks-Morse Co., home appliance division.

MANITOWOC PLANT EXPANSION TO DOUBLE FREEZER CAPACITY

A plant expansion program which will more than double previous freezer production capacity is near completion at Manitowoc Equipment Works, Manitowoc, Wis. The company manufactures Manitowoc upright freezers, plus other low temperature refrigeration equipment on a contract basis.

The $350,000 expansion has been primarily in the assembly area, and all plant sub-assembly lines as well as major assembly lines, are now mechanized. There is also a considerable amount of new tooling to match the flexibility possible through the revised assembly set-up, stated A. N. Dedricks, plant manager.

Research facilities, to be under the direction of Robert Guyton, have


STOP
The MIRO-FLEX CO., Inc., Wichita, Kansas
One of the nation's leading manufacturers of traffic and street signs uses the
RANSBURG NO. 2 PROCESS

PRODUCTION IS NEARLY TRIPLED and FINISHING COSTS ARE CUT 47% with

Ransburg NO. 2 PROCESS

Miro-Flex—with hand spray—used to finish 90 signs per hour. Now, with the Ransburg No. 2 Process, production has jumped to 250 units per hour. Overall net saving in finishing cost is 47%—largely due to a 40% increase in paint mileage. And, they are getting a more uniform coating—with NO REJECTS.

This is another on-the-job example of what Ransburg No. 2 Process is doing on production lines all over the country. If you want to know more about the Ransburg No. 2 Process, write for our brochure containing data and detailed information on various installations.

Electrostatic Painting Processes

RANSBURG ELECTRO-COATING CORP.
Indianapolis 7, Indiana
RANSBURG

been expanded, and include two completely new "hot" rooms where various conditions of temperature and humidity can be duplicated for testing purposes.

SCHOENECKE NAMED GEN. MGR. OF RYAN INDUSTRIES

S. C. Ryan, president of Ryan Industries of Hopkins, Minn., has an-

nounced the appointment of Charles Schoenecke as general manager in charge of all operations. He formerly was chief industrial engineer for Amana Refrigeration, Inc.

Ryan Industries produces the Ryan Freeze Pantry, an upright freezer, and private label freezers. It was indicated that upright freezer production will be doubled within a year.

UDYLITE NAMES HOHNER

Appointment of Clem H. Hohner as district manager of Udylite Corporation's southeast sales district was announced by L. V. Nagle, executive vice president.

Hohner will have charge of Udylite's new warehouse and sales office now under construction in Atlanta. The new facilities will serve plating firms in North Carolina, South Carolina, Florida, Georgia, Alabama and eastern Tennessee.

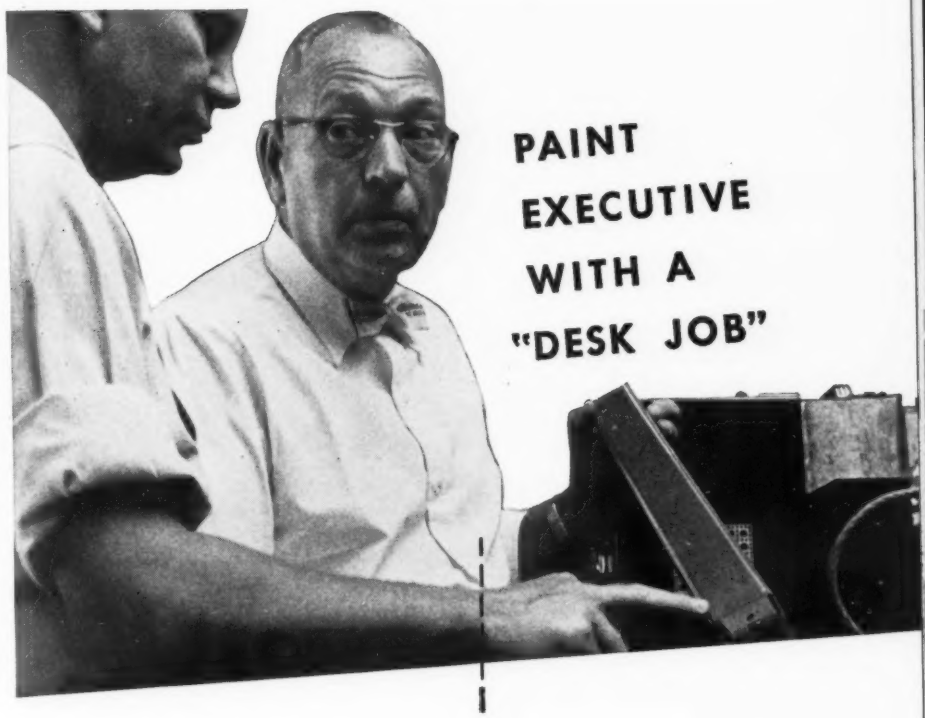
ARMCO RESEARCH DIRECTOR NAMED TO ASTM BOARD

T. F. Olt, director of research, Armco Steel Corp., has been elected a member of the board of directors of the American Society for Testing Materials. He was named to serve a three-year term. Olt joined Armco in 1928, and since 1947 has been director of research.

KAWNEER UPS SEELY, HUIZENGA, AGLER, DIEHL, SIGLER

H. W. Zimmer, executive vice president of The Kawneer Co. has announced the appointments of Irving R. Seely as administrative vice president and Charles B. Huizenga as works manager of both Niles, Mich., plants.

Seely then announced the appointments of W. B. Agler as plant manager of the South Third St. plant, Robert B. Diehl as manager of engineering at the North plant and Charles R. Sigler as manager of product engineering.



Sure enough that's Ferbert-Schorndorfer's Assistant General Manager, Ed Eberman at a desk job . . . . only it's not *his* desk!

The desk leg he is checking belongs to a metal furniture manufacturer who has used Ferbert-Schorndorfer finishes for 30 years . . . almost as long as Ed has been serving at F-S.

You'll seldom find Ed at his own desk pushing buttons or pencils . . . . instead he rolls up his sleeves and goes to the root of customers' paint problems.

Ed Eberman is one of many reasons why manufacturers have been doing business continuously with F-S for up to 31 years. Here no problem is too big or too small for quick, efficient, personalized attention.

If you have a finishing problem, contact F-S today.

THE **FERBERT-SCHORNDORFER** COMPANY

12815 Elmwood Ave. F-S Cleveland 11, Ohio

A DIVISION OF AMERICAN-MARIETTA COMPANY

TITANIUM PIGMENT UPS DIENER

Earl W. Diener has been named eastern sales manager for National Lead Company's Titanium Pigment Corp. He joined Titanium Pigment in 1937 as salesman in the Philadelphia territory. Recently, he was district sales manager of the New England territory.

LITHIUM CORP. LIQUIDATES METALLOY SUBSIDIARY

Lithium Corp. of America, Inc., Minneapolis, has announced that its wholly-owned Metalloy Corp. subsidiary has been liquidated, and that all property and assets have been taken over by the parent organization. It was reported that there has been no change in personnel.

LP-GAS PROMOTION COMMITTEE ISSUES PROSPECT LIST

Lee A. Brand, of Empire Stove Co., Belleville, Ill., chairman of the National Committee for LP-Gas Promotion, has announced a new service to the liquefield petroleum gas industry—an LP-gas prospect list which has been mailed to all members cooperating in the LP-gas promotional program. Divided by state and town for easy reference, the new service will be restricted to contributing members of the program, stated Brand.

CENTRAL ENAMELERS CLUB ELECTS NEW OFFICERS

The Central District Enamelers Club has announced the election of the following officers for 1953-54:

President, L. C. Farrow, Clyde Porcelain Steel Division of Whirlpool Corporation, Clyde, Ohio; 1st vice pres., R. Dale, Ervite Corporation, Erie, Pa.; 2nd vice pres., W. Reynolds, Erie Enameling Co., Erie, Pa.; 3rd vice pres., H. Lindegger, Westinghouse Electric Corporation, Mansfield, Ohio; and secretary-treasurer, M. J. Bozsin, Ferro Corporation, Cleveland, Ohio.

FERRO TO RE-ERECT PHILCO ENAMEL DEPT. IN NEW PLANT

E. W. Dany, vice president and chief engineer, Ferro Corporation, has announced that Ferro has been awarded a contract to dismantle Philco Corporation's porcelain enamel department in their old refrigerator plant in Philadelphia, and re-erect it in Philco's new plant in Connersville, Indiana.

The department's U-type furnace will be enlarged upon rebuilding, and will have a hot zone chain travel of 68 feet, stated Dany.

ROLLED ALLOYS EXPANDS

Rolled Alloys, Inc., Detroit, has announced the opening of new sales offices in Chicago and Philadelphia. The appointments of Frederick P. Lattin, in Chicago, and John Maxson, in Philadelphia, were announced by Rollo W. Boring, sales manager.

Rolled Alloys specializes in the warehousing and distribution of chromium and nickel chromium alloys for use at elevated temperatures. The establishment of the new offices is in keeping with their policy of serving industry's expanding needs for these alloys. Offices in Bridgeport and Los Angeles were opened earlier this year.

Art Linkletter *— visited Amana Refrigeration recently to launch the summer series of "People Are Funny", on the CBS radio network, and toured the freezer production lines. Amana has taken over sponsorship of the show to advertise its food freezers.*

OLSEN HEADS SALES STAFF FOR U. S. STEEL SUPPLY DIV.

Canute R. Olsen has been named manager of the general sales staff of the supply division of U.S. Steel Corp., it was announced by Keith P. Rindfleisch, division sales vice president. Olsen had been manager of the market development division and in May of this year was named acting general sales staff manager for the supply division.

WESTINGHOUSE PORTABLE APPLIANCE SALES UP 30% IN FIRST 5 MONTHS

Sales of Westinghouse portable appliances during the first five months of 1953 were up 30.1% over the same period in 1953, according to R. M. Oliver, manager of appliance specialties, including fans, vacuum cleaners, electric bed coverings, steam irons, roaster ovens, waffle makers, deep fat fryers and other electric housewares.

safe transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

and builds good will for Admiral Corporation

QUALITY CONTROL of Admiral television receivers extends beyond the assembly lines and into the shipping department where Acme Steel strapping is used to insure safe arrival of TV sets in the hands of distributors.

Admiral Corporation, Chicago, "world's largest manufacturer of television receivers," changed its method of shipping TV sets three years ago and 1) eliminated previously heavy damage in transit losses; 2) gained a tremendous amount of good will with its distributor organization.

Up until 1950, Admiral TV sets were placed in shipping cartons and loaded solidly into freight cars. Frequently the sensitive electronic tubes and complex wiring systems in the sets were damaged en route to distributors.

Then Admiral called in Acme Steel shipping specialists to analyze the problem and help cut this loss. W. J. Curtis, traffic manager, tells what happened:

"Since we started using Acme Steel Strapping at our Chicago plant as a shipping safeguard three years ago, we have not had a single TV set damaged in transit which was attributable to improper loading or strapping failure."

Acme Steel Strapping can insure Safe Arrival for *your* products. Write for details to Acme Steel Products Division, Dept. F83, ACME STEEL COMPANY, 2807 Archer Avenue, Chicago 8, Ill.

ACME STEEL

STRAP IT . . . STITCH IT . . . SHIP IT . . . SAFELY!

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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Chicago 1, Illinois
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Warehousing — *For handling two packaged washers at a time in the Whirlpool warehouse, a truck with a specially-built grab device is used. This mechanism permits stacking packaged appliances as close as 3" apart.*

Floating Loads Used — *For carloading, Whirlpool uses a floating load of double-decked washers. Each end has wooden bulkheads around which are tensioned three bands of steel strapping.* *(See story on Page ST-6)*

CUSTOM DESIGNED

HEAVY-DUTY SHIPPING CONTAINERS

PERFECTION STOVE speeds packing, stacking, handling

Perfection Stoves have been shipped in INTERNATIONAL's specially designed cap and tube shipping container for over two years with these successful results.

1. **Special Interlock-type cap and tube construction permits easier and more efficient lifting holds—without the use of forks or gripping irons. It enables faster handling and closer stacking.**
2. **Time-study proves consistent and exceptional saving in packing.**
3. **Minimum of uncrating hazards—no nails, and you need no hammers or pinch-bars.**
4. **Tare weight reduced.**
5. **Large clean surfaces give ample room to print information and advertising.**
6. **This custom designed heavy-duty shipping container is approved by the Freight Classification Committee and is accepted by the railroads as an approved container.**

Let us tell you more about the advantages of this specially developed container—and other International containers designed for specific jobs. Write us at any of the manufacturing plants listed below.

The lift truck inserts the lifting flange under one side of cap and pulls up. The strong construction enables sure, fast lifting and close stacking.

International Paper company

CONTAINER DIVISION

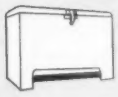
220 East 42nd Street, New York 17, N. Y.

Los Angeles 54, Cal. 5120 South Soto St.
Kansas City 3, Kan. 2102 Kansas Ave.
Somerville 45, Mass. Clyde & Warwick Sts.
Wooster, Ohio 689 Palmer St.
Springhill, Louisiana
Georgetown, So. Carolina
St. Louis 11, Mo. 7901 Michigan Ave.
Chicago 38, Ill. 5133 West 65th St.
Whippany, New Jersey

BEAM MANUFACTURING COMPANY

Thor

Westinghouse



CRISDEN & SEXTON

Universal

GAS RANGE

Florence RANGES

Hotpoint

CROSLEY DIVISION, AVCO MFG. CORP.

Ultramatic

Caloric

GAS RANGES

They all ship with SCOTCH Filament Tape BRAND because...

SERVEL, INC.

Magic Chef, INC.

Kelvinator

HARDWICK

AUTOMATIC GAS RANGES

THE ENAMEL PRODUCTS COMPANY

ROPER

Apex

Perfection

Deepfreeze

MIDWEST MANUFACTURING COMPANY

GLOBE AMERICAN CORPORATION

BENDIX

Beautyrange®

These well-known members of the National Safe Transit Association find "Scotch" Brand Filament Tape both strong and *resilient*—ideal for heavy-duty banding, bundling and sealing.

They find it *strong* because as many as 10,000 continuous rayon or glass filaments reinforce every inch of width, give up to 5 times the tensile strength, 50 times the tear-resistance of most industrial tapes now on the market.

They find it *resilient* because these cable-strong filaments are embedded in an elastic, pressure-sensitive adhesive that sticks tight to the job, absorbs jolts and jars again and again.

No wonder "Scotch" Brand Filament Tape is such a strapping success! No razor-sharp edges to injure handlers. No "catching" and tearing during loading. No difficult disposal problem.

It's available in many widths and colors for shipment identification. Try "Scotch" Brand Filament Tape today!

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SCOTCH BRAND FILAMENT TAPES

3M

The term "Scotch" and the plaid design are registered trademarks for the more than 200 pressure-sensitive adhesive tapes made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 122 E. 42nd St., New York 17, N.Y. In Canada: London, Ont., Can.

finishfotos

In this packaging conveyor pho the assembly pallet has dropp free, and washer edge prepares contact and pull out solid fib sheet from between conveyo rollers. This sheet will serve give extra protection to the bott of the washer.

Pressure packing automatic washers

an example of how engineered handling and packing methods can be closely integrated for speedy and efficient packaging

by C. J. Phiscator • PACKAGING ENGINEER, WHIRLPOOL CORPORATION, ST. JOSEPH, MICHIGAN, AS TOLD TO *Matt Heuertz*

safe transit

Packaging operations at Whirlpool have undergone a very careful scrutiny since World War II, and especially in the past few years. Our never-ending search for better packaging materials and methods has enabled us to pack and ship automatic washers and dryers from our main plant in St. Joseph, Michigan, at a pace which has multiplied several times in the past five years.

Whirlpool presently ships home laundry appliances in two different types of containers. Automatic washers, clothes dryers, and ironers (produced at Clyde, Ohio), are shipped in corrugated boxes. Conventional washers, also produced at Clyde, are shipped in wood crates. For export shipment, cartoned appliances are given the added production of a wood crate around the carton.

The final production phase for Whirlpool washers provides an example of how we have closely integrated handling and packing for a speedy and efficient packaging operation. In some cases, our present methods are the outgrowth of several years of close work with suppliers of packaging materials and handling equipment. In other cases, we developed innovations of our own which aided in simplifying operations on our packaging line.

Packing starts with final assembly

The first operation in the packaging of our automatic washer begins in the second floor assembly department with the insertion of creped wadding in the corners between the washer cabinet and the top assembly. Pressure-sensitive tape holds this cushioning material firmly in place.

The washer, resting on a tubular steel pallet, is then carried by an overhead conveyor down to the packaging department. At the first station in this department, the washer is slid from the conveyor's steel plat-

Left: Multi-wall corner pads, with creped cellulose facing, are inserted the full length of the pack in the four corners.

Above: In addition to corner pads, a pad with creped cellulose facing (shown stacked upper right) is placed over top of unit for surface protection.

Lower Left: Packaged washers enter one of two sealer lines. Sealing of top and bottom container flaps takes 3 minutes.

Below: Special lift device for placing one packaged washer on top of another. The two units are then carried on the platform-floor conveyor to warehousing or carloading.

form hanger onto a roller conveyor. The metal serial tag is affixed to the back of the washer, and the shipping tag is taped to the top. An instruction sheet is dropped into the washer, and creped wadding is placed between the lid and the top. The lid is then taped shut.

Just before the appliance reaches the packing station, it passes over an area on the roller conveyor where a specially-built section with short rolls permits the pallet to drop free. The washer edge then contacts a fiber sheet inserted in a slot between the conveyor rollers. As the washer moves down the line, it pulls the sheet out of the slot and under the unit. This sheet provides added protection for the bottom of the appliance which now passes onto a power conveyor belt.

Pressure-packing begins

Here the shipping tag is taken from the top of the washer and is

stapled to the corrugated carton which is then dropped over the unit. A special guard rail on each side of the conveyor line keeps the bottom container flaps out of the way of the packers.

Multi-wall corner pads, with creped cellulose facing, are then inserted the full length of the pack in the four corners, providing 3/4" clearance between the sides of the appliance and the carton. Next the top pack is placed over the unit.

The four corner "posts" hold the appliance rigidly in place laterally, with the creped facing providing protection for the washer's corner surfaces. In addition, the corner posts provide vertical rigidity and stacking strength so that we can, if necessary, stack the packaged washers six high without crushing the surfaces of underneath containers. In actual practice, however, we only stack them four high to facilitate handling operations in the warehouse.

The top pad of the washer supplements the corner packs. This support consists of a sheet of fibre board to which is glued two built-up pads surfaced with creped cellulose facing as protection for the appliance's top surface. While the complete multi-wall corner pads are available directly from the supplier, the top pads are presently being assembled near our packaging line. (Altogether, we use six carloads of packaging materials a day.)

As the packaged washers move down the line, the top and bottom inside flaps are folded into position before they reach a distribution point where different-sized units are automatically shunted to either of two case sealing lines.

Pressure-sealing the "package"

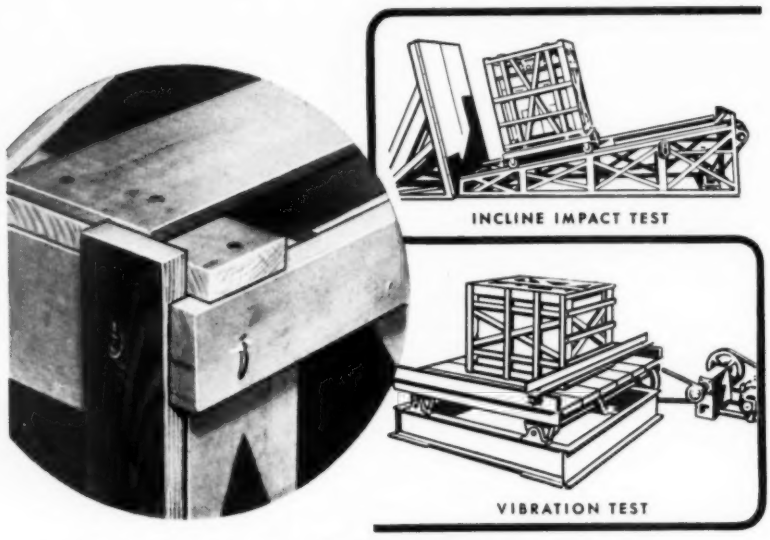
As the packaged appliance enters the sealer, a special unit rolls glue on inner bottom and inner top flaps. The packaged product then passes through a compressor station where the outer flaps are tightly held against the inner flaps to "seal" the case. The sealing operation takes three minutes, and is accomplished as the packaged appliance moves toward the exit end of the sealing machine.

Leaving the sealer, the washer is transferred to a roller floor conveyor which ends at a platform floor conveyor feeding the warehouse and loading dock. At this juncture is a stacking station where one packaged washer is placed on top of another by a special lift device. The two units then pass on down the floor conveyor to the shipping room where they are either loaded directly into boxcars, or are stacked four high in the shipping warehouse.

Special hand trucks for handling two packaged washers

The packaged washers are loaded into the boxcars two at a time. For this loading operation, we developed a special hand truck which has two small grabs with round head rivets for holding. The rivet heads bite into the sides of the carton when the toggle is closed, and thus hold the cartons tight.

See carloading and warehousing photos and descriptions on page ST-3.



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EXCLUSIVE TIGHT CORNER HINGE

stands up under scientific laboratory testing!

● B-G CRATES and PALLET BOXES assure you the utmost in STRENGTH and SAFETY in the shipping and storage of your products.

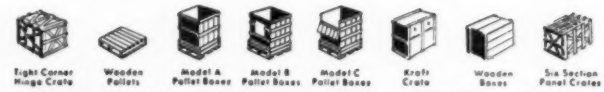
● B-G Containers are SCIENTIFICALLY ENGINEERED and TESTED in our new, modern laboratory, APPROVED by the NATIONAL SAFE TRANSIT COMMITTEE.

● B-G Unique TIGHT CORNER feature makes possible a sturdy, collapsible hinge container assuring GREATEST ECONOMY in your shipping, handling and storage problems.

● B-G Tight Corner Containers are INDIVIDUALLY ENGINEERED to fit your product.

● B-G invites your inquiries for further information. Sales engineer will call upon request.

● B-G offers without obligation the benefits of 30 YEARS EXPERIENCE in DEVELOPING BETTER, STRONGER and more EFFICIENT Shipping and Storage CONTAINERS.



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for holding lids in place . . . for ARNO Tapes have added strength . . . are easy to use . . . and will not leave any disfiguring stains.

√ ARNO Paper Backed Tape

over rubber gear pumps . . . for positive guaranteed protection in spraying operation.

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- **WE MAKE GOVERNMENT SPECIFICATION TAPES**
- **WE SPECIALIZE IN PRESSURE SENSITIVE TAPES**
- **WE MAKE GUARANTEED NON-STAINING TAPES**

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Refer your taping problems to ARNO . . . our engineers and tape specialists can help you solve all tape difficulties . . . recommend tapes to meet your needs. No charge or obligation, of course.

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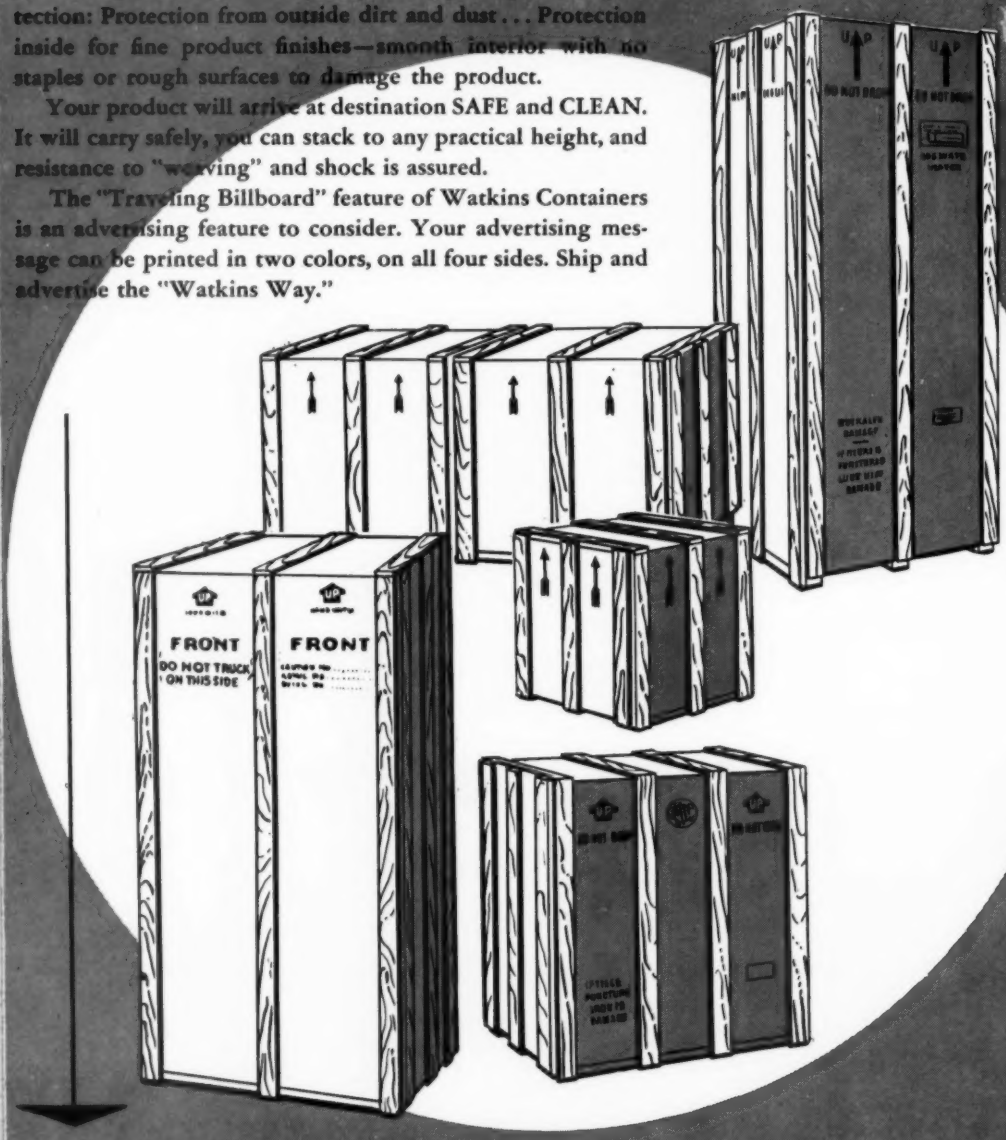
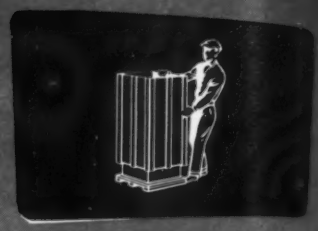
WATKINS
Containers give COMPLETE protection

With Watkins Containers you get complete product protection: Protection from outside dirt and dust . . . Protection inside for fine product finishes—smooth interior with no staples or rough surfaces to damage the product.

Your product will arrive at destination SAFE and CLEAN. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured.

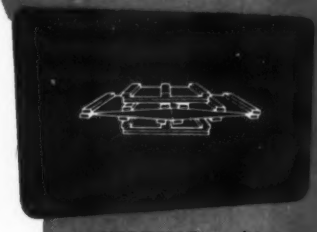
The "Traveling Billboard" feature of Watkins Containers is an advertising feature to consider. Your advertising message can be printed in two colors, on all four sides. Ship and advertise the "Watkins Way."



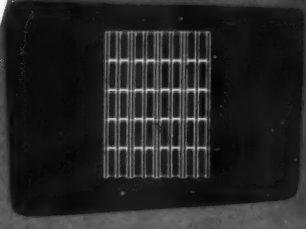


ASSEMBLY is speeded up with this easy-to-handle container. The assembly crews are all for packing the Watkins Way.

HANDLING shocks in the factory, in transit, and during delivery are resisted by the wood cleats, glued tube mat construction.



STORING problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.



STACKING is easy and safe, due to the supporting strength (minimum 4 tons on most containers) that is *engineered* into the Watkins design.

THERE IS A WATKINS CONTAINER MADE NEAR YOU

It will pay you to check with one of these companies now

Cornell Paperboard Products Co. . . . . 1514 E. Thomas Ave., Milwaukee, Wis.
Cozier Container Corp. . . . . . 446 East 131st Street, Cleveland, Ohio
Crate-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc. . . . . . 10901 Russett Street, Oakland, California
Dura-Crates, Inc. . . . . . 940 East Michigan Street, Indianapolis, Indiana
General Box Co. . . . . . 1825 Miner St., Des Plaines, Illinois, and 16th and Maple Sts., Louisville, Kentucky
Howe & Martin Mfg. Co. . . . . . Watseka, Illinois
Illinois Box & Crate Co. . . . . . 811 Center Street, Plainfield, Illinois
Kieckhefer Box & Lumber Co. . . . . . 1715 West Canal Street, Milwaukee, Wis.
Lane Container Corp. . . . . . 10212 Denton Road, Dallas, Texas
Louisburg Container Co. . . . . . 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. . . . . . Tillsonburg, Ontario, Canada
Love Mfg., Inc. . . . . . 608 South Commerce Street, Wichita, Kansas
Utility Crate Corporation . . . . 1985 E. 16th Street, Los Angeles 21, California

—an inquiry to any of these companies will get prompt attention—

The · WATKINS CONTAINER · Manufacturers

Much materials handling at Lovell has been conveyorized. For instance, dryer chassis parts, following welding operations, are hung on conveyor "banks" such as seen on right in photo.

Handling and packaging at Lovell

(Production story continued from Page 37)

PACKAGING and shipping methods at Lovell are simplicity itself. The company studied many methods of packaging and many cartons (and still looks for bettering this phase of manufacturing), and has wound up with a collapsible, wood-strip reinforced container that slips over the dryer on the conveyor line and is joined to top and bottom pieces with minimum labor.

Pressure-sensitive tape used

Prior to the slipping of this container in place, however, while one worker is removing test wire connections and placing labels on the unit back, a second worker places pressure-sensitive tape at important spots on the dryer. For example, two pieces of this three-quarter inch tape are applied to each side of the top, and one piece across the edge of the door opposite the hinged side. This taping precaution is to allow for some jouncing and bumping during shipment.

Properly taped and carefully packed, the finished dryer is then ready to stand the normal handling encountered during shipment, which is largely by rail.

Finally, collapsible container is slipped over the clothes dryer for shipment.

130 Safe Transit Certifications

THE following companies are certified under the National Safe Transit Program.

A-B Stoves Division
Detroit-Michigan Stove Company
Detroit, Michigan

Active Tool & Manufacturing Co.
Detroit, Michigan

Admiral Corporation
Chicago, Illinois

AllianceWare, Inc.
Alliance, Ohio

Altorfer Bros. Company
Peoria, Illinois

American Kitchens Division
Avco Mfg. Corp.
Connersville, Indiana

Apex Electrical Manufacturing Co.
Cleveland, Ohio

Automatic Washer Company
Newton, Iowa

Barrows Porcelain Enamel Company
Cincinnati, Ohio

Beam Manufacturing Company
Division of Solar Corporation
Webster City, Iowa

The Bellaire Enamel Company
Bellaire, Ohio

Belmont Stamping & Enameling Co.
New Philadelphia, Ohio

Bendix Home Appliances
Division — Avco Mfg. Corp.
South Bend, Indiana

Ben-Hur Manufacturing Company
Milwaukee, Wisconsin

Boston Stove Foundry Company
Reading, Massachusetts

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Cleveland, Ohio

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Indianapolis, Indiana

Bryant Heater Division
Affiliated Gas Equipment, Inc.
Tyler, Texas

Brown Stove Works, Inc.
Cleveland, Tennessee

Caloric Stove Corporation
Topton, Pennsylvania

Canadian General Electric Co., Ltd.
Montreal, Quebec, Canada

Canadian Westinghouse Company, Ltd.
Hamilton, Ontario, Canada

Canton Stamping & Enameling Co.
Canton, Ohio

Central Rubber & Steel Corporation
Findlay, Ohio

Chambers Corporation
Shelbyville, Indiana

Chicago Vitreous Enamel Product Co.
Cicero, Illinois

Conlon Bros. Mfg. Co.
Chicago, Illinois

Conlon-Moore Corporation
Chicago, Illinois

Continental Water Heater Co.
Los Angeles, Calif.

Cribben and Sexton Company
Chicago, Illinois

Crosley Division, Avco Mfg. Corp.
Richmond, Indiana

Crosley Division, Avco Mfg. Corp.
Nashville, Tennessee

Crunden Martin Manufacturing Co.
St. Louis, Missouri

Davis Products Co.
Niles, Michigan

Day & Night Division
Affiliated Gas Equipment, Inc.
Monrovia, California

Dearborn Stove Company
Chicago, Illinois

Deepfreeze Appliance Division
Motor Products Corporation
North Chicago, Illinois

Detroit-Michigan Stove Company
Detroit, Michigan

The Dexter Company
Fairfield, Iowa

Dixie Products, Inc.
Cleveland, Tennessee

The Duchess Company
Alliance, Ohio

Duo-Therm Division
Motor Wheel Corporation
Lansing, Michigan

Eagle Range & Mfg. Company
Belleville, Illinois

Easy Washing Machine Corporation
Syracuse, New York

The Enamel Products Company
Cleveland, Ohio

Fedders-Quigan Corporation
Buffalo, New York

Fedders-Quigan Corporation
Maspeth, Long Island, N. Y.

Federal Enameling & Stamping Co.
Pittsburgh, Pennsylvania

Firestone Steel Products
Akron, Ohio

Firestone Steel Products
Wyandotte, Michigan

The Fletcher Enamel Company
Dunbar, West Virginia

Florence Stove Company
Kankakee, Illinois

Florence Stove Company
Lewisburg, Tennessee.

The Floyd-Wells Company
Royersford, Pennsylvania

Frigidaire Division
General Motors Corporation
Dayton, Ohio

General Electric Company
Erie, Pennsylvania

Geneva Modern Kitchens, Inc.
Geneva, Illinois

Globe American Corporation
Kokomo, Indiana

Hardwick Stove Company
Cleveland, Tennessee

Haskell Manufacturing Co., Inc.
Pittsburgh, Pa.

Heintz Manufacturing Company
Philadelphia, Pennsylvania

Holland-Rieger Division
Apex Electrical Mfg. Co.
Sandusky, Ohio

Hotpoint Company
Chicago, Illinois

Ingram-Richardson, Inc.
Frankfort, Indiana

International Harvester Company
Evansville, Indiana

Jordon Refrigerator Co., Inc.
Philadelphia, Penna.

Kaiser Metal Products, Inc.
Bristol, Pennsylvania

Kresky Manufacturing Co., Inc.
Petaluma, California

Kuehne Manufacturing Co.
Mattoon, Illinois

Landers, Frary & Clark
New Britain, Connecticut

A. J. Lindemann & Hoverson Co.
Milwaukee, Wisconsin

Lisk-Savory Corporation
Buffalo, New York

Luxra Company
Atchison, Kansas

Magic Chef, Inc.
Cleveland, Ohio

Magic Chef, Inc.
Lorain, Ohio

Magic Chef, Inc.
St. Louis, Missouri

Majestic Manufacturing Co.
St. Louis, Missouri

Malleable Iron Range Company
Beaver Dam, Wisconsin

Malsbary Manufacturing Co.
Oakland, California

Manitowoc Equipment Works
Manitowoc, Wisconsin

The Maytag Company
Newton, Iowa

McCray Refrigerator Company, Inc.
Kendallville, Indiana

Meadows Division, Thor Corporation
Bloomington, Illinois

Midwest Manufacturing Company
Division of Admiral Corp.
Galesburg, Illinois

Moffats, Limited
Weston, Ontario, Canada

The Moore Enameling & Mfg. Co.
West Lafayette, Ohio

Mt. Vernon Furnace & Mfg. Co.
Mt. Vernon, Illinois

Murray Corporation of America
Scranton, Pennsylvania

Murray Manufacturing Company
Murray, Kentucky

Nash-Kelvinator Corporation
Grand Rapids, Michigan

Neon Products, Inc.
Lima, Ohio

Nesco, Inc.
Milwaukee, Wisconsin

Newark Stove Company
Newark, Ohio

Norge Division, Borg-Warner Corp.
Effingham, Illinois

Norge Division, Borg-Warner Corp.
Herrin, Illinois

Norge Division, Borg-Warner Corp.
Muskegon Heights, Michigan

Odin Stove Manufacturing Co.
Erie, Pennsylvania

O'Keefe & Merritt Company
Los Angeles, California

Payne Furnace Division
Affiliated Gas Equipment, Inc.
Monrovia, California

Peerless Manufacturing Corporation
Louisville, Kentucky

Perfection Stove Company
Cleveland, Ohio

Philco Corp., Refrigerator Division
Philadelphia, Pennsylvania

Prentiss-Wabers Products Co.
Wisconsin Rapids, Wisconsin

Quincy Stove Mfg. Co.
Quincy, Illinois

Ranney Refrigerator Company
Greenville, Michigan

Remington Corporation
Auburn, New York

Republic Stamping & Enameling Co.
Canton, Ohio

Revco, Inc.
Deerfield, Michigan

Reznor Manufacturing Company
Mercer, Pennsylvania

Rheem Manufacturing Company
Chicago, Illinois

Geo. D. Roper Corporation
Rockford, Illinois

Milton Roy Company
Philadelphia, Pennsylvania

Samuel Stamping & Enameling Co.
Chattanooga, Tennessee

Seeger Refrigerator Co.
Evansville, Indiana

Seeger Refrigerator Co.
St. Paul, Minnesota

Servel, Inc.
Evansville, Indiana

A. O. Smith Corporation
Kankakee, Illinois

Speed Queen Corp., Ironer Division
Algonquin, Illinois

The Tappan Stove Company
Mansfield, Ohio

Temco, Inc.
Nashville, Tennessee

Thor Corporation
Chicago, Illinois

Universal Major Elec. Appliances, Inc.
Baltimore, Maryland

United States Stamping Company
Moundsville, West Virginia

Victor Products Corporation
Hagerstown, Maryland

Westinghouse Electric Corporation
East Springfield, Mass.

Westinghouse Electric Corporation
Mansfield, Ohio

Westinghouse Elec. Corp.,
Beaver, Pa.

Westinghouse Electric Corp.
Sunbury, Pennsylvania

S. S. White Dental Mfg. Co.
Staten Island, New York

York Corporation
York, Pennsylvania

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SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE

DuPont Circle Building, 1346 Conn. Ave., N.W., Washington 6, D.C.

Safe Transit Certifications Total 130 - Three new companies, representing a wide variety of manufactured products, have recently been added to the list of certified companies. They are: Neon Products, Inc., Lima, Ohio, manufacturers of electric signs; Ben-Hur Mfg. Co., Milwaukee, Wisc., manufacturers of home and farm food freezers; and Brown Stove Works, Inc., who have installed the necessary equipment for the pre-shipment testing of gas ranges, electric water heaters, coal and wood range and heaters.

- - - - -

New Safe Transit Laboratories - Bigelow-Garvey Lumber Company, Chicago, Ill., and The Mengel Company, Corrugated Box Division, Winston-Salem, N.C., are the 23rd and 24th laboratories to be certified under the National Safe Transit Program on the basis of having fully equipped laboratories for conducting Safe Transit pre-shipment tests.

- - - - -

TEST PROCEDURE FOR COMPLETELY LOADED FREIGHT CARS

The NST Technical Planning Division has developed a "Procedure for Pre-shipment Testing of Basic Carloading." The Procedure, which is being prepared in booklet form for distribution in August, will be known as Project 1B, and will be made available only to certified companies and laboratories.

The Test Procedure introduces a second phase of pre-shipment testing and is a result of the Committee's continuing research program to further reduce damage to products in transit. The Test Procedure takes into consideration the crushing forces which may be encountered in the railroad freight car while in transit. The booklet points out how this Test Procedure, combined with the regular National Safe Transit tests on individual packaged products, provides a test program which will bring in-transit losses to a new minimum.

- - - - -

NST Film Has Premiere Showing in Hawaii - The National Safe Transit Program film was shown recently to the representatives of the Hawaiian Electric Supply Company and the Castel & Cooke Ltd., agents for the Matson Navigation Company in Honolulu. Foreign groups have evinced considerable interest in the pre-shipment testing program and film, and programs have been arranged for visiting groups, but the Hawaii showing by an American company is the first outside the United States and Canada.

- - - - -

Laboratories Report - The NST Laboratory Coordinating Division recently queried certified laboratories with a view to gaining additional information on how it might broaden its activities to further serve the laboratories themselves and the entire Safe Transit Program. Among the questions asked was "Do you feel that the test methods as now in use can be applied to the testing of products other than those specifically covered by the present scope of the Program?" Participants in the Program and those outside its present scope will be interested to know that all answers registered were affirmative. The feeling was expressed that the Safe Transit Test Procedures as now set up can serve as a basis for a greatly expanded Program into areas beyond its original concept. The National Safe Transit Policy Committee is giving consideration to this point of view as basic plans are laid for the future.

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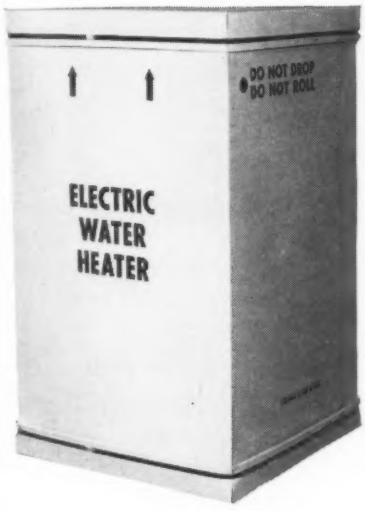
If it's tough to pack it...DRUMPAK it!



Hotpoint

...saves by shipping electric water heaters in DRUMPAK Heavy Duty Containers. In addition to substantial dollar savings on the container, tare shipping weight has been reduced 25 lbs. and labor savings up to 50% are expected through improved packaging methods now being perfected.

The **DRUMPAK** Heavy-Duty Container — Tailored to Fit Your Product — Gives You These Protection Features:

- **EXTRA RUGGED STRENGTH** — in DRUMPAK's end-reinforced design and tough, resilient materials.
- **CUSTOM-FITTED** — to practically any size or shape of product, to meet all shipping conditions.
- **SPACE-SAVING** — DRUMPAK comes to you knocked-down-flat for easy storage — ready to assemble in seconds.
- **MOISTURE-PROOFED** — liners are available, also sift-proofed seals for powdered products.
- **VERSATILE** — DRUMPAK is solving packing problems for such diversified products as nails, sandpaper, stitching wire, rope, plastic sheeting, rubber hose, television sets and other major appliances.

For more information write for a DRUMPAK brochure containing complete details.

Gaylord Boxes

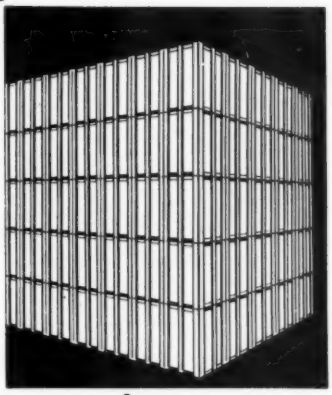
- Corrugated and Solid Fibre Boxes
- Kraft Paper and Specialties
- Kraft Bags and Sacks
- Folding Cartons

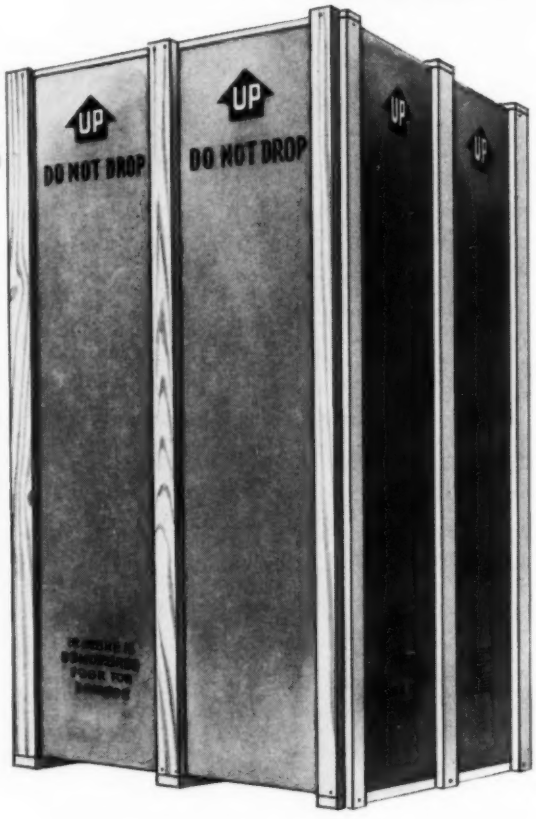
GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • *Branches:* New York • Chicago • San Francisco • Atlanta • New Orleans Jersey City • Indianapolis • Los Angeles • Seattle • Houston • Oakland • Minneapolis • Detroit Columbus • Fort Worth • Tampa • Dallas • St. Louis • Cincinnati • Des Moines • Oklahoma City Portland • Greenville • San Antonio • Memphis • Kansas City • Bogalusa • Chattanooga Milwaukee • Weslaco • New Haven • Amarillo • Appleton • Hickory • Sumter • Greensboro Jackson • Miami • Omaha • Mobile • Philadelphia • Little Rock • Charlotte • Cleveland

KIECKHEFER MILWAUKEE

BUILDS CONTAINERS FOR STRENGTH





Producers of economical product protection for "around the corner or across the nation". Service includes Pallets, Kieckhefer Paletboxes, Industrial Lumber and specially-designed special-purpose containers.

Scientific tests prove that Kieckhefer-built Watkins Containers have STRENGTH superior to other conventional types of crates and containers. You can stack your products to any reasonable height without fear of damage or distortion.

In a Kieckhefer-built Watkins Container you get light weight . . . convenient storage . . . ease of assembly . . . advertising value (a traveling billboard) . . . *plus* greater STRENGTH.

For appliances, furniture, and many other products requiring *complete* shipping protection, the K-M Watkins Container is the logical answer.

Whether your current problem is a single neon sign, industrial equipment or finished products in volume production—check Kieckhefer-Milwaukee for a practical, economical solution.

PACKAGING ENGINEERS
KIECKHEFER MILWAUKEE
FOR FIFTY YEARS

KIECKHEFER BOX AND LUMBER CO.

• WOODEN BOXES • BOX SHOOKS • CRATES • CLEATED FIBRE SHIPPING CONTAINERS •

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Union Pacific's "Plexiglas Car" teaches safe handling

WHAT happens to the lading inside a boxcar when it is coupled at eight miles per hour instead of the four miles per hour stipulated by railroad operating officials?

For the past nine months, yard and train service employees of Union Pacific literally have been able to see the results of excessive speed coupling, thanks to one of the most unusual innovations in modern railroading — a transparent boxcar.

A step toward damage reduction

Constructed last summer by U. P. as a step toward reducing freight damage, the car has been used in demonstrations before officers and employees at 31 different points along the railroad's 10,000 miles of line.

With one entire side fitted with Plexiglas, the car created quite a stir when it was put into service last fall. It was featured in *Life* and appeared on the "Industry on Parade" television show.

Three-foot wide speedometer

Virtually as unique as the car's transparent side is the huge speedometer — three feet in diameter — mounted on the exterior. This enables railroad employees, standing many feet from the car, to note its speed as it is moved in demonstration switching carrying a simulated load.

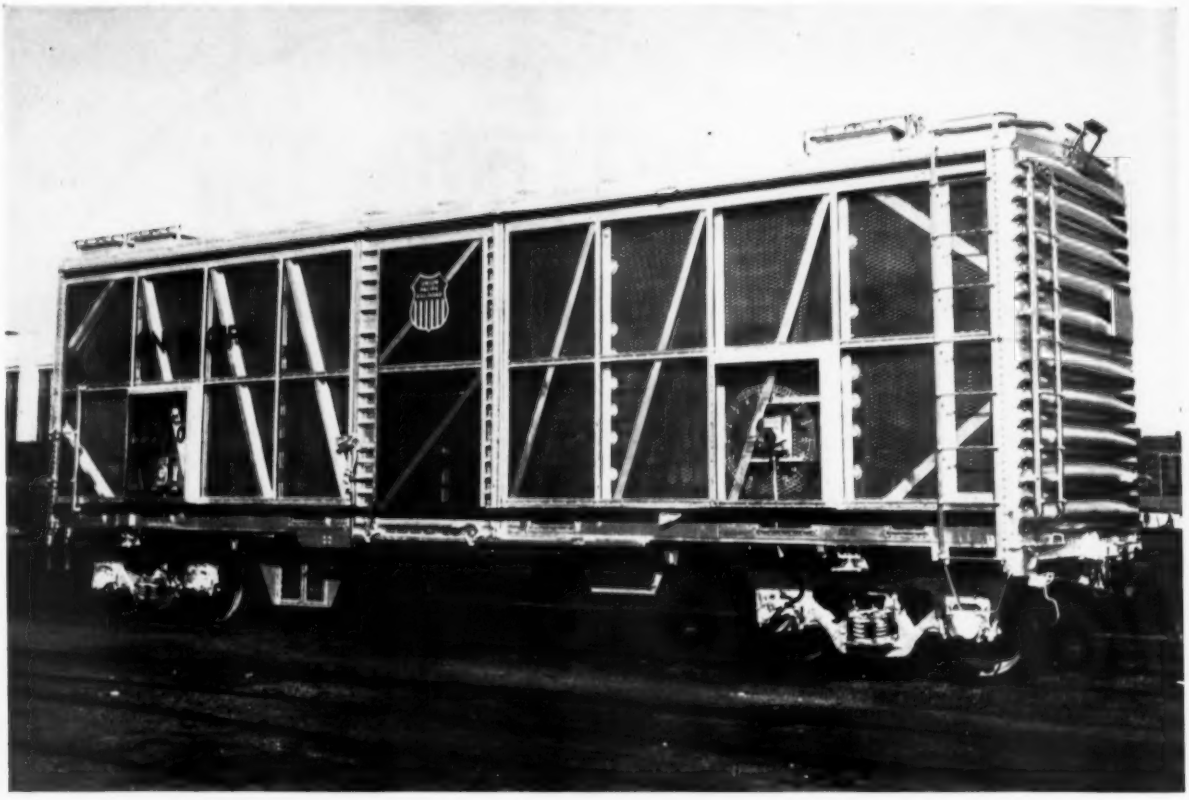
The Plexiglas is a show window for observing how a boxcar's load reacts while being moved in the yards. In addition, the car's standard metal roof has six hatches through which the lading can be observed from above.

First of its kind, the transparent boxcar was proposed at an annual U. P. loss and damage prevention meeting at Salt Lake City by an operating department official.

Like any other show window, the interior is illuminated by electric lights in the ceiling set in shockproof sockets. The car has its own power plant.

Since the transparent car side doesn't have the usual wood lining, the lading is kept from contact with the Plexiglas by a network of metal.

Wouldn't it be pleasant if they did ship pretty girls around the country in transparent boxcars? However, Mary Jane Cacioppo, Esther Thomas and Eloise Arnold are only demonstrating the visibility of Union Pacific Railroad's Plexiglas car.



The transparent boxcar in the above picture is no new "style setter" in freight car construction, but is Union Pacific Railroad's travelling laboratory in a campaign to reduce freight damage. With one entire side fitted with Plexiglas, the car is used to demonstrate the effect of switching, and other impacts on loads in boxcars to yard and train service forces and shippers. The car will also be used to check the efficiency of various types of loading methods and bracing. A three-foot diameter speedometer registers speed at the time of impact.

For further protection, the Plexiglas is set in rubber to cushion it and to absorb its expansion under heat. When the car is in transit, plywood panels cover the Plexiglas to protect it against scratches and pitting.

The car was constructed at Union Pacific's Omaha shops under the direction of D. S. Neuhart, general superintendent of motive power and machinery, and is making its demonstration tour under the supervision of O. J. Wullstein, general claims agent.

On loan to other railroads

At the present time the car is on loan to other railroads for demonstrations before their respective employees.

All demonstrations are made with the same load, which provides a common denominator for the varying speeds and loading reactions. It consists of 31 water-filled steel barrels, painted red for better visibility, and steel-strapped into a floating unit. The weight is approximately 13,000 pounds.

Factors governing load reaction

Union Pacific officers have pointed out that speed is not the only factor which governs load reaction. Obviously, the result will be more drastic if the transparent car is coupled to a string of loaded ore cars than it would be against empty boxcars.

However, U.P. freight loss and damage prevention men touring with the car have noted that the following reactions are the usual ones at the majority of demonstrations:

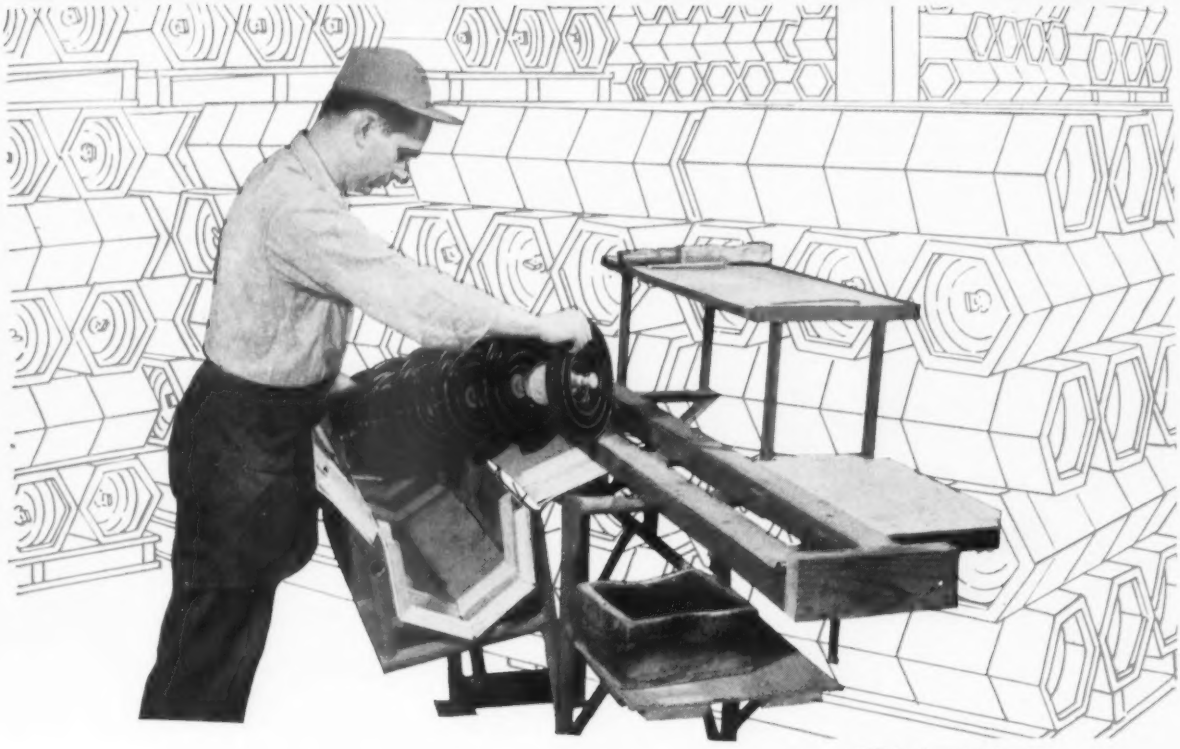
Speed	*Load Shift*
4 miles per hour	4 to 6 inches
5 miles per hour	10 to 16 inches
8 miles per hour	8 to 9 feet

As an educational aid, the car is highly regarded by railroaders. One demonstration does more to instill an appreciation of the importance of freight damage prevention in yard and train service workers than all "the correspondence, preaching and pamphlets" to which they have ever been subjected, to use the words of one official.

To check loading methods

After the car has served its purpose as a demonstrator, Wullstein hopes to use it to check the efficiency of various types of loading methods and bracing for an assortment of commodities. Looking forward to its possible use as a loading laboratory, U.P. has fitted the car with 68 permanent-type anchor plates, a sufficient number to accommodate a countless variety of loads.

PACKAGING IN *JIG* TIME



cut packaging costs 25%

with GENERAL ENGINEERED CONTAINERS

Find out how other manufacturers are cutting packaging costs. Write for your free copy of "The General Box."

Packaging six porcelain insulators in a bulky nailed crate was a time-consuming two-man operation at Victor Insulators, Inc., Victor, New York. Introduction of the sturdy, lightweight General Wirebound Box and the jig-assembly system shown here enabled Victor engineers to reduce packaging to a quick efficient one-man operation, cut packaging costs by an estimated 25%.

This is only one example of hundreds of packaging problems solved each year—at a saving—in General Box Company's two fine Industrial Packaging Laboratories. General packaging experts stand ready to help *you* cut costs too. Write today for complete details.

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ENGINEERED SHIPPING CONTAINERS FOR EVERY SHIPPING NEED

Generalift Pallet Boxes • Cleated Corrugated and Watkins-Type Boxes • All-Bound Boxes
Wirebound Crates and Boxes • Corrugated Fiber Boxes • Stitched Panel Crates

Bathtub production at Norris-Thermador

→ *from Page 26*

storage tanks on an elevated platform for holding until required for use. Air agitation is used in these tanks to prevent any settling out.

Both a centrifugal sieve and magnetic separator are used in transferring the slip from the wood storage tanks to the 60 gallon pressure tanks. When a pressure tank is filled, a card is attached to it giving all pertinent data for subsequent use by production control.

Due to the overall completeness of the conveyorized facilities, reducing handling to a minimum, and also to a well-planned work program which keeps every employee busy for an entire eight-hour shift, the production rate per employee at Norris-Thermador is outstanding. The only non-conveyorized handling in the entire production picture is transportation of the flat sheet stock to the

Operation shows crating a bathtub at the Norris-Thermador plant in Los Angeles. Straw pads are installed in the wirebound crate at each contact point to minimize shipping damage.

the grip of an **iron fist**

in a soft **velvet glove**

cush-on-strap by Sackner

A patented Steel Strapping faced with soft, fluffy cellulose padding. CUSH-ON-STRAP is prescored to desired lengths and ready for immediate use. Ideal for packing all types of appliances and other finished metal products.

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GRAND RAPIDS 2, MICHIGAN

REGAN NAMED CHAIRMAN OF 1953 INDUSTRIAL PACKAGING, HANDLING SHOW

Thomas W. Regan, vice president of General Box Co. in charge of its Winchendon, Mass., plant, has been appointed chairman of the 1953 Industrial Packaging and Materials Handling Exposition, to be held in Boston, October 20-22.

The appointment was announced by Stanley Price, national president of the sponsoring organization, the Society of Industrial Packaging and Materials Handling Engineers.

MANTZ NAMED CHAIRMAN OF SIPMHE COMPETITION

Ray A. Mantz, supervisor of materials handling and product protection laboratory of manufacturing research, International Harvester Co., Chicago, and president of the Illinois Division of the Society of Industrial Packaging and Materials Handling Engineers, has been named chairman of the SIPMHE-sponsored 8th annual National Protective Packaging and Materials Handling Competition.

C. J. Carney, Jr., SIPMHE managing director, said early indications are that entries in the seven divisions of the competition will exceed the record-breaking number of last October's competition held in Chicago.

giant press in another building, then transportation of the formed tubs back to the enameling department. As the big press is used also for deep draw work in heavy caliber cartridge body production, it was initially located so it would be of maximum convenience to both operations.

While this article has dealt largely with bathtub production, it should be pointed out that the same enameling facilities are used in the production of two different types of sinks, three types of lavatories, and hundreds of range parts. But with fully conveyorized handling, with ample conveyor capacity, and by careful pre-planning and scheduling of each type of product, the work is made to blend so smoothly that production of all types of ware can be synchronized effectively.

ASTM CITES EARL STIVERS

At the recent annual meeting of the American Socity for Testing Materials, Earl R. Stivers, director, Package Research Laboratory, Rockaway, N. J., was cited "for distinguished service to the Society, especially in the field of packaging, as represented particularly by leadership, enthusiasm and technical knowledge reflected in the work of Committee D-10 on Shipping Containers where he was Secretary for 16 years, and later Vice Chairman and Acting Chairman."

ACME STEEL NAMES LAMMERS, EVANS, PROUT TO SALES POSTS

John G. Bucuus, president, Acme Steel Products Division, Acme Steel Company, Chicago, has announced the appointment of the following product sales managers:

C. Robert Lammers concerned with Steelstrap for reinforcing all types of shipping packs; Edward C. Evans with sales activities involving Unit-Load Band, used for bracing carload freight, and John H. Prout with stitching machines and wire, used in assembly of corrugated shipping containers and of fibre, fabric and metal products.

C. T. CACKLEY DIES, MEMBER OF WOODEN BOX ASSN. STAFF

Claibourne T. Cackely, 48, for the past ten years a member of the staff of the National Wooden Box Association, died June 18 after an illness of several months. During the past two years he also served as secretary of the National Wooden Pallet Manufacturers Association.

Word of Mr. Cackley's death reached member of the box industry during the National Wooden Box Association meeting June 18-19, in White Sulphur Springs, W. Va.

CERTIFICATION FOR BEN-HUR, NEON PRODUCTS, BROWN STOVE WORKS, MENGEL LABORATORY

The National Safe Transit Committee has announced the certification of Neon Products, Inc., Lima, Ohio, Ben-Hur Mfg. Co., Milwaukee, Brown Stove Works, Inc., Cleveland, Tenn., and The Mengel Company's laboratory, Winston-Salem, N. C.

How these crates saved one shipper 40% on crating costs

This shipper saves a full 40%, just on the initial cost of these Weyerhaeuser-designed crates. Total savings on crating and shipping costs run even higher, because these low-cost Weyerhaeuser crates also gave this company these additional advantages:

1. Contents need no anchoring, blocking or padding to give the crate rigidity—which means better protection for contents as well as lower packing costs.
2. Crated products can be safely stacked to save warehouse space.
3. They weigh 35% less than crates previously used.
4. Assembly is faster because the design automatically positions the panels.

Perhaps *your* crates can be re-designed to reduce costs and eliminate many costly damage claims. Expert design service is offered by Weyerhaeuser crating engineers on sectional crates. Write for information and suggestions on your particular needs.

Weyerhaeuser Sales Company

Industrial Wood Parts Department

Room 2143 • 400 West Madison Street • Chicago, Illinois

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District sales supervisor needed at once to represent nationally known metal cleaning company. Territory Northeastern part of the United States. The person we are seeking must have had Plating, Alkali Cleaning, or Phosphate Coating experience. Excellent starting salary and incentive plan. Interviews will be granted in the near future. Please send resume of experience.

Send replies to Box 853, c/o *finish*, 360 N. Michigan Ave., Chicago 1, Ill.

SITUATION WANTED

PURCHASING DIRECTOR

Seeking connection with aggressive appliance manufacturer. Experienced all phases of purchasing, last 3 years in Gas Furnace field. Some Governmental contract experience. Age 40. Will relocate.

Address reply to Box 853-A, c/o *finish*, 360 N. Michigan Ave., Chicago 1, Ill.

DEARBORN STOVE ANNOUNCES PURCHASE OF ODIN STOVE

Dearborn Stove Company, with plants in Chicago and Dallas, has announced the purchase of Odin Stove Manufacturing Co., Erie, Pa., producer of gas and electric ranges and clothes dryers. Dearborn Stove makes gas room heaters.

Control of Dearborn was acquired recently by a group of Dallas investors headed by C. A. Sammons, T. A. Rose, and D. O. Tomlin, the latter now Dearborn's president.

NEW YORK U. OFFERING COURSE ON CURRENT PACKING PROBLEMS

Current packing problems and present-day military packing techniques are among the subjects to be studied in "Packing and Packaging: Design Techniques and Cost Reduction Studies," a course to be offered in the fall term by New York University's Division of General Education.

The course will be held on Tuesday evenings, September 22 to January 19, at NYU's Washington Square Center.